ALTERNATIVE FUTURES FOR WORLD FOOD IN 1985

VOLUME 3, WORLD GOL MODEL STRUCTURE AND EQUATIONS

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ABSTRACT

The structure of the world grain-oilseeds-livestock (GOL) projections model is described, base period data are defined, and the 930 mathematical equations used in the model are presented. Tables of elasticities are also presented to facilitate evaluation of particular coefficients used in the model's equations. The simultaneous solutions of the model use a linear programming computer technique.

The GOL model projects world patterns of production, consumption, trade, stocks, and prices for major grains, oilseeds, and livestock commodities for up to 28 major world countries and regions. The model is designed to quantify the impact of alternative assumptions regarding population growth, income growth, policy variations, and agricultural productivity growth rates. The mathematical relationships can be modified to evaluate additional alternatives.

Key words: Projections, agriculture, world food problems, economic model, grains, oilseeds, livestock products, trade.

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FOREWORD

The Economics, Statistics, and Cooperatives Service (ESCS) is working on a continuing basis on projections of changes in world export markets, population, income, and resource and environment constraints and on their impact on the U.S. agricultural sector. The affected U.S. variables include production, consumption, trade, prices, farm costs, and farm incomes.

Major components of the projections program are world, regional, and country projections of production, demand, trade, and prices of major commodities important in agricultural trade. These projections are useful in evaluating the broad issues of future world food prospects.

The projections are made within the framework of a mathematical world grain-oilseeds-livestock (GOL) model. The model is designed to capture the main economic relationships of the three groups of commodities and to test the impact of different economic and policy assumptions on projected quantities and values.

Projections of U.S. agricultural exports generated by the GOL model are not official ESCS projections of U.S. trade in agricultural commodities. Rather, they are presented to aid users in evaluating the impact of different assumptions on world trade.

Structure and equations of the world GOL model are being presented in this volume. Together with the other GOL volumes, this volume provides the model documentation. The GOL model is one analytical tool used along with other ESCS computer programmed mathematical models for analyzing future food and agricultural trade prospects.

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PREFACE

This study reports on one phase of an ongoing research effort in the Economics, Statistics, and Cooperatives Service (ESCS) aimed at generating and maintaining up-to-date price, production, consumption, and trade projections for agricultural commodities in the major countries and regions of the world. The study assesses alternative world food prospects through the use of a mathematical model of the world's grain-oilseeds-livestock economies (GOL) model.

The study is being published in four volumes. Volume 1, an analytical report, discusses the output of the model's projections to 1985. Volume 2 contains detailed country and regional supply-distribution tables and related price and growth rate tables. Volume 3, the present report, describes and presents the mathematical equations used in the GOL model. Volume 4 will be a users' manual. Volume 2 is expected to be updated periodically to maintain a current set of alternative projections.

This research effort requires substantial ongoing teamwork from members of the Commodities Program Area working with others in the Foreign Demand and Competition Division (FDCD) of ESCS and with other ESCS divisions in the area of econometric model development and country-specific analysis. Under the overall direction of Anthony S. Rojko, significant inputs have been made by Donald Regier (livestock and derived feed), Patrick O'Brien (grains), Arthur Coffing (oilseeds), Robert Barry (rice), Myles Mielke (dairy), and Linda Bailey. Several people helped to develop the computer programs, beginning with Francis Urban in the early stages, Hilarius Fuchs during the main development stage, and Fenton Sands and Martin Schwartz in the later stages. The contribution of Angela Wray in editing the materials in this volume is also acknowledged.

While it is impossible to cite all the individuals in FDCD who contributed to this work, special recognition is given to Wayne Denney, Gene Hasha, John Link, and John Parker for their contribution to the productivity aspects of the developing world. Recognition is also acknowledged to James B. Johnson, Leroy Quance, and Allen Smith for their contribution to the U.S. sector.

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WORLD GOL MODEL STRUCTURE

The relationships affecting production, consumption, trade, and prices of grains, oilseeds, and livestock products have long challenged analysts in this country and abroad. World models have been developed for individual commodities or small commodity groupings; in these models, the world is usually viewed as a number of regions. Multicommodity models have been developed for a given country, but they usually treat the rest of the world in a residual way.

The world grain-oilseeds-livestock (GOL) model presented here adopts both views. It contains a sufficient number of regions to capture regional detail. At the same time, a sufficient number of commodities are treated to trace out the impact of quantity and price changes for one commodity in a given region upon prices and availabilities of the same or other commodities elsewhere in the world.

The U.S. sector included in the GOL model is representative only. Full U.S. models are used along with the GOL model in ongoing projection work in the Economics, Statistics, and Cooperatives Service (ESCS) of USDA, especially to provide export projections which tie in with detailed domestic U.S. projections.

The GOL model can also provide an analytical framework for international agricultural and trade policy evaluations.

In matrix form, the world GOL model may be written as --

$$AX = H \tag{1}$$

where A is a square coefficient matrix of linear relationships containing 930 rows and columns, X is a vector of 930 endogenous variables, and H is a matrix of the exogenous part of the model. In general, A is not varied between projections runs. Variables in H, however, can take on different values or a different combination of variables, depending on the alternative assumptions about the future. Rewriting, equation (1) becomes

$$X = A^{-1}H \tag{2}$$

with equation (2) providing the projected values under different alternatives.

A, X, and H can be decomposed in various ways: by region (the GOL model contains 28), commodity (of which there are 14), and economic function (production, demand, price, trade, etc). Price variables are further broken down by currency (dollar, peso, etc.) and by market level (retail, wholesale, producer, trade, etc). Most variables are specified within individual regions. However, prices and trade are by nature internationally linked. Physical equilibrium is defined in a twofold

sense: (1) at the regional level and (2) at the world level. At the regional level, excess supply or excess demand help determine net trade and price pressures. At the world level, exports and imports sum to zero; consequently, production equals consumption unless provision is made in a specific alternative for stock accumulations or drawdowns. Using population and income growth rates, supply and demand elasticities, physical input-output rates, and policy assumptions as inputs, the model develops projections of area, production, food and feed use, trade levels, and prices for several commodities by regions.

Within a region, the GOL model consists of seven major blocks of equations:

1. Demand block - Livestock products
2. Supply block - Livestock products
3. Demand block - Feed crops
4. Demand block - Food crops
5. Supply block - Crops
6. Price linkages within regions
7. Regional equilibrium

To relate and tie the regions together, two additional blocks of equations are needed:

8. Price equations linking regions
9. World equilibrium equations for each commodity

Figure 1 shows schematically the interrelationships tying these blocks together at the regional and world levels.

Typically, the equations in blocks 1 and 4, describing human demand for food commodities, contain (1) a set of endogenous variables, including direct price of the particular commodity and the prices of competing and complementary commodities, and (2) a set of exogenous variables, which includes per capita income, population, and sometimes a time trend describing shifts in tastes. Food crops typically include wheat, coarse grains, and rice. Livestock products include individual meats, beef and veal, pork, poultry, and mutton, as well as milk, cheese, butter, and eggs. Demand for table beef is identified in the United States. Soybeans are human food in some regions, notably Japan. But oilcake or meal is treated as livestock feed. The following are typical demand equations: 1/

. Wheat demand for food = F(prices of wheat, corn, rice;
per capita income, population,
changing tastes)

1/ While the model has all endogenous variables on the left-hand side of the equality and exogenous on the right, the presentation shows a single endogenous variable as functions of other variables.

SUPPLY AND DEMAND SECTORS FOR A TYPICAL REGION IN GOL MODEL

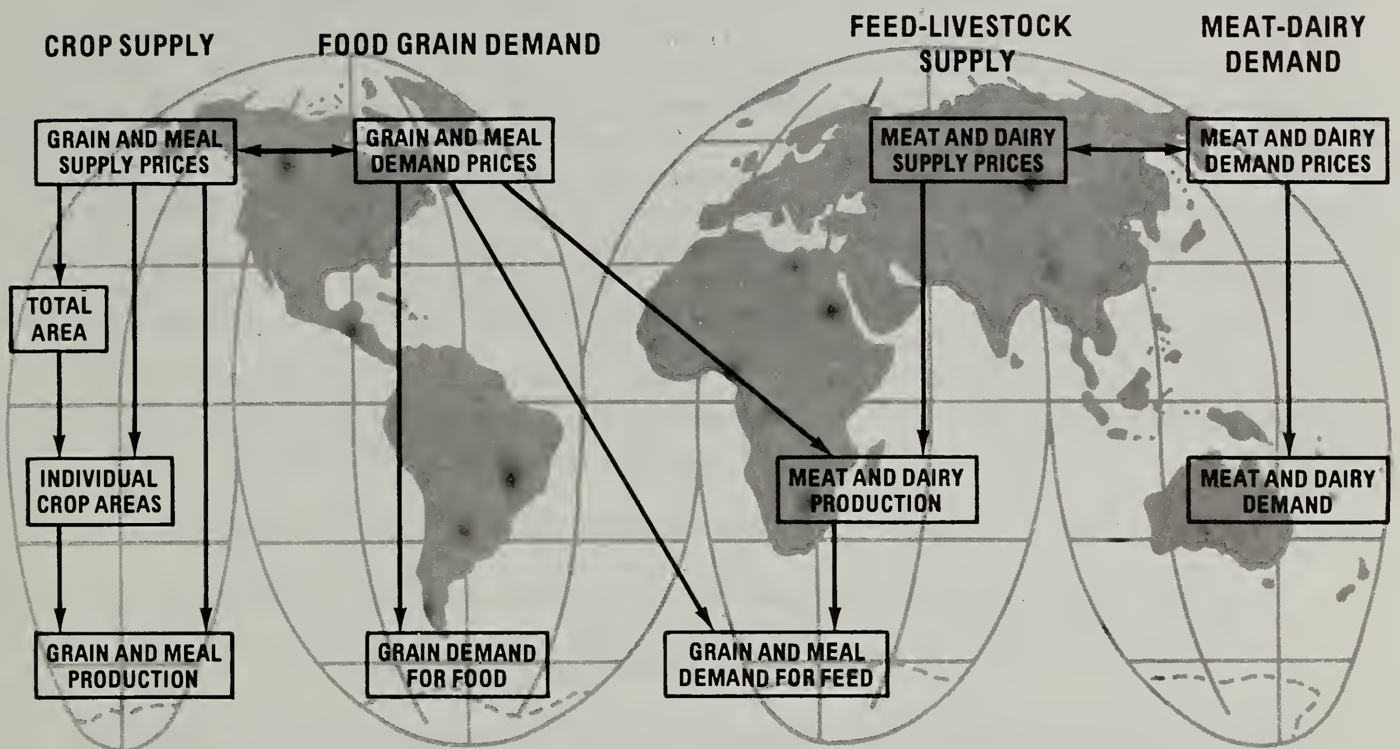

Figure 1

. Beef demand = F(prices of beef, pork, poultry; per capita income, population, changing tastes)

Block 2 defines livestock production. Meat production is shown as a function of individual meat prices to allow for competition between meats. The prices of individual feeds are also included to allow for the effect of production costs. A trend variable is included for improvements in productivity. These equations are typical:

. Beef production = F(prices of beef, pork, poultry, coarse grain, oilmeal; productivity growth)

. Milk production = F(prices of milk, butter, coarse grain, oilmeal; productivity growth)

Feed demand, the link between the livestock and crop sectors, is more complex. The basic link is a set of physical input-output rates expressing the tons of grain or oilseed meal used in producing a ton of a given livestock product. Feed prices and livestock product prices are used to adjust the effective input-output rates so that they are consistent with projected economic conditions. Typical equations are:

. Grain demand for feed = F(physical production of beef, pork, poultry, milk; prices of pork, beef, corn, oilmeal; productivity growth)

. Oilmeal demand for feed = F(physical production of beef, pork, poultry, milk; prices of pork, beef, corn, oilmeal; productivity growth)

The supply block for both grains and oilseeds is determined within block 5. It includes (1) an area equation and (2) a production equation to represent yield. 2/ Changes in total cropped area are dependent on the prices of key crops and such factors as reclamation and technology. Individual crops share the available total area on the basis of historic shares, relative prices of competing crops, and rate of expansion of available area. Production is a function of area and direct and competing prices; prices reflect higher input use in response to higher crop prices. Typical crop supply equations are shown below:

. Total crop area = F(prices of wheat, corn, oilseeds; expansion of available area)

. Wheat area = F(total crop area; prices of wheat, corn, oilseeds)

. Wheat production = F(wheat area; price of wheat; physical input bundle)

Price linkage equations in block 6 connect internal prices at different marketing levels as well as international trade prices. The following equation forms are typical:

. Supply price of beef = F(demand price of beef; productivity growth; policy factors)

. Wholesale price of wheat = F(trade price of wheat)

Price linkage equations in block 8 link the trade prices among regions. Regional equilibrium conditions comprising block 7 state the physical imbalance within a region, defining whether a region is an exporter or importer. The world equilibrium equations in block 9 provide for the summing up of all the regions to obtain world totals, with production equal to consumption, and with world exports equal to world imports except when stock changes are also included in the analysis.

For the developed countries, the GOL model captures the interaction of food demand, feed demand, and livestock production and consumption. However, for developing regions with only a modest livestock economy and little foreign trade in animal products, the livestock demand and supply blocks are not specified. Feed demand equations for these regions are direct functions of the exogenous factors affecting demand and supply of livestock products and of the livestock feeding rates:

. Feed demand for grain = F(prices of corn and oilmeal; per capita income, population, changing tastes; productivity growth)

2/ A yield equation could not be used directly because the endogenous part of the model is linear and area times yield is nonlinear.

The economies of Eastern Europe, the Soviet Union, and the People's Republic of China present a different situation. In each region, for each commodity representing a significant quantiy of foreign trade, a single equation has been synthesized to relate net foreign trade directly to the usual demand determinants and other factors. However, the production and consumption links associated with a particular trade alternative are determined outside the GOL model. This is a typical equation:

- Net imports of wheat = F(trade prices of wheat and corn; per capita income, population, changing tastes; productivity growth; policy factors)

While the matrix A must be linear, there is no such restriction on matrix H. The form of H depends on assumptions as to impacts expected of particular exogenous variables used. The general form of H is --

$$H = B\,(1 + R)^{T} + CZ + DT + E$$

--where the impacts may take one or some combination of the following forms:

$$H_1 = B\,(1 + R)^{T} + E_1$$

$$H_2 = CZ + E_2$$

$$H_3 = DT + E_3$$

H_1, H_2, and H_3 sum to H in the general form and E_1, E_2, and E_3 to E. In the first form, H_1 is a compound growth process, where B is a vector of bases to be compounded, R is a set of growth rates for particular exogenous variables, and T is the number of years over which compounding occurs. The second form, H_2, represents a linear relationship to some exogenous variable, where C is the coefficient matrix and Z a vector of exogenous variables. The third form, H_3, is simply an allowance for linear trends, where D is the matrix of trend increments and T is the span of years over which the trends operate.

All terms in H must be individually projected for each projection alternative before the solution can be calculated and the variations in the endogenous variables, X, determined.

As indicated above, the livestock sector is not specified for all regions of the world. Table 1 indicates those regions which (1) produce or consume mainly grain, (2) consume significant quantities of livestock products, (3) produce commercially important quantities of livestock products, (4) employ sufficient quantities of feedstuffs to justify incorporating feed demand equations into the GOL model, and (5) are represented in the world model structure, at this stage, only by net trade equations.

Table 2 sets out the definitions of the commodities used in the GOL model. Table 3 displays the currencies and exchange rates used in particular regions. Table 4 is a listing of the countries in each region of the world.

Table 1--Variables used in the world grain-oilseeds-livestock model

Region	Wheat	Rice	Coarse grain	Oilseed meal	Milk	Cheese	Eggs	Beef cuts	Beef products	Pork	Poultry	Mutton and lamb
Developed countries:												
United States	DF PA	D PA	DF PA	F PA	D S	D S	P	D P	D P	D P	D P	D
Canada	DF PA	D	DF PA	F PA	D S	D S	P		D P	D P	D P	
EC-6	DF PA	D PA	DF PA	F PA	D S	D S	P		D P	D P	D P	D P
EC-3	DF PA	D PA	DF PA	F PA	D S	D S	P		D P	D P	D P	D P
Other Western Europe	DF PA	D PA	DF PA	F PA	D S	D S			D P	D P	D P	D P
Japan	D PA	DF PA	DF PA	DF PA	D S	D S	P		D P	D P	D P	D P
Australia/New Zealand	DF PA	D PA	DF PA	F PA	D S	D S	P		D P	D P	D P	D
South Africa	D PA	D	DF PA	F S		D S			D P	D P	P	D P
Centrally planned countries												
Eastern Europe	T	T	T	T					T	T		
Soviet Union	T	T	T	T					T			
China	T	T	T	T						T		
Developing countries:												
Middle America	DF PA	D PA	DF PA	F PA					D P	D P		
Argentina	D PA	D PA	DF PA	F PA					D P	D P		D P
Brazil	D PA	D PA	DF PA	F PA					D P	D P		
Venezuela	D PA	D PA	DF PA	F PA								
Other South America	D PA	D PA	DF PA	F PA								
High-income North Africa and Middle East	D PA	D PA	DF PA	F								
Low-income North Africa and Middle East	D PA	D PA	DF PA	S								
East Africa	D PA	D PA	DF PA									
Central Africa	D S	D S	D S	T								
India	D PA	D PA	DF PA	F PA								
Other South Asia	D PA	D PA	D PA									
Thailand	D	D PA	DF PA									
Other Southeast Asia	D	D PA	DF S									
Indonesia	D	D PA	D PA	D PA								
High-income East Asia	D PA	D PA	DF PA	F PA								
Low-income East Asia	D	D PA	DF PA	S								
Rest of world						T			T	T		T

D = Demand, total or nonfeed
F = Derived demand for feed
P = Production
A = Area
S = Supply
T = Foreign trade, net

Table 2--World GOL model commodities

Code	Commodity
N.	Each or all of the commodities modeled
T.	Crops, each or all
G.	Grains, each or all
W.	Wheat, product weight
R.	Rice, milled equivalent, product weight
C.	Corn and other coarse grains, product weight
K.	Oilseeds, meal equivalent, product weight
S.	Soybeans, meal equivalent, product weight
A.	Livestock products, each or all
M.	Meats, each or all
B.	Beef and veal, carcass weight
BT	Beef, table, carcass weight
BP	Beef, process, carcass weight
P.	Pork, carcass weight
Z.	Poultry, ready-to-cook weight
V.	Mutton, lamb, and other meat, carcass weight
L.	Milk and dairy products, fluid equivalent, product weight
LM	Fluid milk, product weight
LC	Cheese, product weight
LB	Butter, product weight
E.	Eggs, product weight

Table 3--World GOL model currencies and exchange rates 1/

Region	Currency code	Exchange rates
Developed countries:		
United States	CD	U.S. dollar
Canada	CC	1 Canadian dollar = 1 dollar equivalent
European Community	CU	1 unit of account = 1 dollar equivalent
Other Western Europe	CU	Dollar equivalent
Japan	CY	357.600 yen = 1 dollar equivalent
Australia/New Zealand	CA	.897 Australian dollar = 1 dollar equivalent
South Africa	CE	Dollar equivalent
Centrally planned countries:		
Eastern Europe	CE	Dollar equivalent
Soviet Union	CE	Dollar equivalent
People's Republic of China	CE	Dollar equivalent
Developing countries:		
Argentina	CP	3.75 new peso = 1 dollar equivalent
Others	CE	Dollar equivalent

1/ Exchange rates as of July 1972. Dollar equivalent = 1 U.S. dollar.

Table 4--World GOL model regions

Region	Code	Composition
I. Developed Countries:		
United States	US	United States
Canada	CN	Canada
EC-6	C6	Belgium, France, West Germany, Italy, Luxembourg, Netherlands
EC-3	C3	Denmark, Ireland, United Kingdom
Other Western Europe	WE	Austria, Finland, Greece, Iceland, Malta, Norway, Portugal, Spain, Sweden, Switzerland
Japan	JP	Japan
Oceania	AZ	Australia, New Zealand
South Africa	SF	Botswana, Lesotho, Namibia, Republic of South Africa, Swaziland
II. Centrally Planned Countries:		
Eastern Europe	EE	Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Yugoslavia
Soviet Union	SV	Soviet Union
China	CH	People's Republic of China
III. Developing Countries:		
Middle America	MC	Mexico, Bahamas, Bermuda, Costa Rica, Dominican Republic, El Salvador, Guatemala, Haita, Honduras, British Honduras, Jamaica, Nicaragua, Panama, Trinidad & Tobago, Other Caribbean Islands
Argentina	AR	Argentina
Brazil	BZ	Brazil
Venezuela	VN	Venezuela
Other South America	LA	Bolivia, Chile, Colombia, Ecuador, French Guiana, Paraguay, Peru, Surinam, Uruguay

Continued

Table 4--World GOL model regions--Continued

Region	Code	Composition
High-income North Africa and Middle East	NH	Algeria, Bahrain, Cyprus, Iran, Iraq, Israel, Kuwait, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates
Low-income North Africa and Middle East	NL	Egypt, Jordan, Lebanon, Morocco, Sudan, Syria, Tunisia, Turkey, Yemen (Aden), Yemen (Sana)
East Africa	EF	Kenya, Malagasy Republic, Malawi, Mozambique, Rhodesia, Tanzania, Uganda, Zambia
Central Africa	CF	Angola, Burundi, Cameroon, Central African Empire, Chad, Congo, Ethiopia, Djibouti, Benin, Gabon, Gambia, Ghana, Guinea, Equatorial Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritana, Mauritius, Niger, Nigeria, Reunion, Rwanda, Senegal, Sierra Leone, Somalia, Togo, Upper Volta, Zaire
India	ND	India
Other South Asia	OS	Afghanistan, Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka
Thailand	TH	Thailand
Other Southeast Asia	OE	Burma, Cambodia, Laos, South Vietnam 1/
Indonesia	DO	Indonesia
High-income East Asia	EH	Hong Kong, Singapore, South Korea, Taiwan, Brunei
Low-income East Asia	EL	Malaysia, Philippine Islands
Rest of world	RW	North Korea, North Vietnam 1/, Mongolia, Cuba, Pacific Islands, Papua-New Guinea

1/ The model was designed before the reunification of North and South Vietnam into the People's Republic of Vietnam.

VARIABLE SPECIFICATION

An 8-place code is employed for specifying the price, quantity, and international trade interactions corresponding to 14 commodities, plus land area, for 28 regions of the world. The notation is standard for all commodities and regions.

In the code, the first and second characters identify region or country, the third and fourth designate function, such as demand or supply, the fifth and sixth identify the commodity, and the seventh and eighth specify the currency in which prices, incomes, or values are measured.

Endogenous Variables

The code for endogenous variables identifies region, economic function, commodity, and currency. The first two spaces (1 and 2) together constitute a regional code:

US-	United States
CN-	Canada
C6-	EC, Original Six
C3-	EC, New Three
WE-	Other Western Europe
JP-	Japan
AZ-	Oceania
SF-	South Africa
EE-	Eastern Europe
SV-	Soviet Union
CH-	People's Republic of China
MC-	Middle America
AR-	Argentina
BZ-	Brazil
VN-	Venezuela
LA-	Other South America
NH-	High-income North Africa and Middle East
NL-	Low-income North Africa and Middle East
EF-	East Africa

CF- Central Africa

ND- India

OS- Other South Asia

TH- Thailand

OE- Other Southeast Asia

DO- Indonesia

EH- High-income East Asia

EL- Low-income East Asia

RW- Rest of world

The second two spaces (3 and 4) are functional indicators:

-HA- Area in hectares

-QD- Quantity demanded

-QS- Quantity supplied

-QT- Quantity traded internationally or interregionally, net. Imports are negative, exports are positive.

-PD- Demand price

-PS- Supply price

-PT- Trade price

-PL- Levy price (variable levy)

-CO- Consumption quantity

-EQ- Equilibrium condition

-DS- Demand-supply equilibrium

-SD- Supply-demand equilibrium

-RP- Regional price

-ST- Relationship between a supply price and a trade price

-DT- Relationship between a demand price and a trade price

The third two spaces (5 and 6) signify commodities. Space 5 gives the broad designation, with further breakdown indicated in space 6:

-B.- Beef, including veal

-BT- Beef, table

-BP-	Beef, process
-P.-	Pork
-Z.-	Poultry
-V.-	Mutton, including lamb and goat
-L.-	Milk and dairy products
-LM-	Fluid milk
-LB-	Butter
-LC-	Cheese
-E.-	Eggs
-G.-	Total grain
-GH-	Grain for human demand
-GF-	Grain for livestock feed
-W.-	Wheat
-WH-	Wheat for human demand
-WF-	Wheat for livestock feed
-R.-	Rice
-RH-	Rice for human demand
-C.-	Coarse grains
-CH-	Coarse grains for human demand
-CF-	Coarse grains for livestock feed
-K.-	Oilseeds, meal equivalent, including principally soybeans
-KH-	Oilseeds for human demand
-KF-	Oilseeds for livestock feed
-S.-	Soybeans, meal equivalent
-SH-	Soybeans for human demand

In the context of land area (-HA-), spaces 5 and 6 have the following significance:

-T.-	Total

The fourth two spaces (7 and 8) comprise a currency code, independently specified for each region:

-CD U.S. dollar

-CC Canadian dollar

-CU European Community unit of account (=U.S. dollar in 1970)

-CE Dollar equivalent

-CY Japanese yen

-CA Australian dollar

-CP Argentine new peso

Most regions are specified with dollar-equivalent prices.

The code for endogenous variables identifies region, function, commodity, and currency. An example might be useful in clarifying the employment of the code. Consider the code name, WEQDCF. From the above specification, it is evident that --

WE is Other Western Europe

QD is quantity demanded, and

CF is coarse grains used as livestock feed.

So, the variable name is decoded as: "The quantity of coarse grain demanded as livestock feed in the region called Other Western Europe (which is comprised of Austria, Finland, Greece, Iceland, Malta, Norway, Portugal, Spain, Sweden, and Switzerland)."

As an example of a price, consider the code name, THPDR.CE. The meanings of the elements can be looked up:

TH is Thailand,

PD is demand price,

R. is rice, and

CE is dollar equivalent.

Thus, the variable name has the meaning: "The demand price of rice measured in dollar-equivalent terms in Thailand (a region containing only one country)."

Alphanumeric suffixes are used sparingly to avoid confusion:

A, B, ... etc. are endings to avoid confusion.

1, 2, ... etc. are terminations used in price relationships to avoid confusion and to provide a count of the number of regions interrelated.

Exogenous Variables

Exogenous variables are indicated by special code names:

POP	Population, of all countries
POPD	Population, of a developed country
POPLD	Population, of a less developed country
INCOME	Per capita national income, of all countries
INCOMED	Per capita national income, of a developed country
INCOMELD	Per capita national income, of a less developed country
PRDVTYD	Productivity, index of physical production response in a developed country with respect to a specific commodity
PRDVTYLD	Productivity, index of physical production response in a less developed country with respect to a specific commodity
TRENDD	Time trend, annual increment, in a developed country
TRENDLD	Time trend, annual increment, in a less developed country
TIME	Compound growth factor
ZI	Index of cost of physical inputs in a developed country
PRI	Index of physical use of a bundle of agricultural inputs, such as fertilizers, insecticides, in a developing country

EQUATION SPECIFICATION

The following pages present the mathematical equations used in alternative I. Tables 5 through 12 show the direct- and cross-price elasticities and income elasticities arrived at in the course of research and used in developing the equations. Tables 13 and 14 show the values for the 1970 base quantities and prices, respectively.

Demand Equations

$USQDBT + 1.922\ USPDB - .9235\ USPTB - .3629\ USPDP = 2{,}381.35 + 5{,}952[1 + .4(.02921) + .00726]^{T}$

$USQDBP - .8932\ USPDB + 3.004\ USPTB - .2952\ USPDP - .5085\ USPDZ = 967.48 + 4{,}841[1 + .3(.02921) + .00726]^{T}$

$USQTBT - .0217\ USPDB + .0365\ USPTB = .003 + 47[1 + .0100]^{T}$

$USQDP - 1.151\ USPDB + 3.085\ USPDP - .6644\ USPDZ = 1{,}897.0 + 6{,}325[1 + .10(.02921) + .00726]^{T}$

$USQDZ - .6119\ USPDB - .5467\ USPDP + 4.709\ USPDZ = 2{,}241.42 + 4{,}483[1 + .8(.02921) + .00726]^{T}$

$USQDLM + 50.19\ USPDLM = 6{,}712.91 + 33{,}566[1 - .1(.02921) + .00726]^{T}$

$USQDLB + .2306\ USPDLB = 350.05 + 500[1 + .00726]^{T}$

$USQDLC + .4407\ USPDLC = 531.48 + 1{,}063[1 + .5(.02921) + .00726]^{T}$

$USQDWH + 55.63\ USPDW = 3{,}170.9 + 15{,}854[1 + .00726]^{T}$

$USQDCH + 57.11\ USPDC = 3{,}012.55 + 15{,}064[1 + .00726]^{T}$

$USQDRH + .5103\ USPDR = 262.8 + 1{,}314[1 + .2(.02921) + .00726]^{T}$

$USQDWF - .0420\ USQDGF + 150\ USPDW - 150\ USPDC = 940.58$

$$USQDGF - 4.181\ USQSB - 6.431\ USQSP - 2.765\ USQSZ - .3273\ USQSL - 2.912\ USQSE - 44.78\ USPSB - 81.48\ USPSP \\ + 1{,}037\ USPDC - 160.6\ USPDK = - 151{,}624.25 + 136{,}772[1 + .003]^{T}$$

$USQDCF - USQDGF + USQDWF = 0$

$$USQDKF - .2842\ USQSB - .4060\ USQSP - .7883\ USQSZ - .0301\ USQSL - .4236\ USQSE - 2.711\ USPSB - 8.238\ USPSP \\ - 269.8\ USPDC + 89.22\ USPDK = - 24{,}717.55 + 14{,}234[1 + .01]^{T}$$

Supply Equations

$USQSB - 4.49\ USPSB + 38.15\ USPDC + 5.909\ USPDK = - 502.68 + 10{,}063[1 + .016]^{T}$

$USQSP - 6.624\ USPSP + 47.21\ USPDC + 7.313\ USPDK = 0 + 6{,}227[1 + .005]^{T}$

$USQSZ - 6.624\ USPSZ + 52.98\ USPDC + 10.94\ USPDK = - 466.2 + 4{,}659[1 + .025]^{T}$

$USQSE = 4{,}077[1 + .00726]^{T}$

$USQSL - 168.5\ USPSL + 7.911\ USPSB + 302.3\ USPDC + 124.9\ USPDK = 63{,}801.45 + 1{,}000\ T$

$USQSLC - .4940\ USPDLC + .3925\ USPDLB = .051 + 993[1 + .5(.02921) + .00726]^{T}$

$USQSL - USQDLM - 20.9516\ USQDLB - 8.8469\ USQSLC = 335.23$

$USHAT - 951.6\ USPTW - 2{,}168\ USPTC - 438.4\ USPTS = - 153.3\ USZI - 138{,}017.06$

$USHAW - 809.0\ USPTW + 603.0\ USPTC + 112.0\ USPTS - .243\ USHAT = - 185.4$

$USHAC + 585.6\ USPTW - 1{,}652\ USPTC + 361.8\ USPTS - .538\ USHAT = - 18{,}355.2 - 487\ T$

$USHAR - 4.414\ USPTR = .0310 + 5\ T$

$USHAK + 223.4\ USPTW + 1.049\ USPTC - 473.8\ USPTS - .219\ USHAT = 18{,}540.6 + 487\ T$

$USQSW - 2.144\ USHAW - 34.08\ USPTW = 2{,}001.29 - 40.02\ USZI + 590\ T$

$USQSC - 4.023\ USHAC - 290.5\ USPTC = 16{,}582.15 - 331.7\ USZI + 4{,}260\ T$

$USQSR - 3.657\ USHAR - 1.627\ USPTR = - 287.92 + 51\ T$

$USQSK - 1.193\ USHAK - 3.483\ USPTS = - 400.19 + 872\ T$

Continued

Regional Equilibrium Conditions

$- USQSB + USQDBT + USQDBP + USQTB = 0$

$- USQSP + USQDP + USQTP = 0$

$- USQSZ + 1.0393\ USQDZ = 0$

$USQDV + USQTV = 0$

$USQTV = 54[1 + .0470]^T$

$- USQSLB + USQDLB = 0$

$- USQSLC + USQDLC + USQTLC = 0$

$- USQSW + USQDWH + USQDWF + USQTW = 0$

$- USQSC + USQDCH + USQDCF + USQTC = 0$

$- USQSR + USQDRH + USQTR = 0$

$- USQSK + USQDKF + USQTK = 0$

Supply-Demand Price Equations

$USPSB - .65\ USPDB = - 756.7$

$USPSP - .40\ USPDP = - 186$

$USPSZ - USPDZ = - 319$

$USPDLM = 133.75[1 + .05(.02921)]^T$

$USPDLB - .04773\ USPDLB = 30.946$

$USPDLC - .11303\ USPDLC = - 32.914$

$USPSL - .6314\ USPDLM - .2034\ USPSLB - .1652\ USPSLC = 3.6170$

$USPTS - USPTK = 16.6$

Demand-Trade Price Equations

$USPDB - 1.0(1.0)\ USPTB = 909$

$USPDP - 1.0(1.0)\ USPTP = 76$

$USPDLC - .5\ USPTLC = - 510$

$USPDW - 1.0(1.0)\ USPTW = - 1.73$

$USPDC - 1.0(1.0)\ USPTC = - 4.32$

$USPDR - 1.0(1.0)\ USPTR = 338.07$

$USPDK - 1.0(1.0)\ USPTK = - 13.15$

Demand Equations

$$CNQDB + .80\ CNPDB - .3954\ CNPDP - .3095\ CNPDZ = 136.8 + 912[1 + .6(.03009) + .01436]^{T}$$

$$CNQDP - .3459\ CNPDB + .5948\ CNPDP - .1995\ CNPDZ = 88.21 + 588[1 + .15(.03009) + .01436]^{T}$$

$$CNQDZ - .1888\ CNPDB - .1237\ CNPDP + .7747\ CNPDZ = 128.43 + 428[1 + .8(.03009) + .01436]^{T}$$

$$CNQDLM + 5.217\ CNPDLM = + 742.2 + 3{,}711[1 - .1(.03009) + .01436]^{T}$$

$$CNQDLB + .0717\ CNPDLB = + 103.53 + 148[1 - .3(.03009) + .01436]^{T}$$

$$CNQDLC + .0485\ CNPDLC = + 55.48 + 111[1 + .6(.03009) + .01436]^{T}$$

$$CNQDWH + 1.938\ CNPDW - 1.39\ CNPDC = 49.08 + 2{,}455[1 - .25(.03009) + .01436]^{T}$$

$$CNQDCH - 1.682\ CNPDW + 4.020\ CNPDC = 106.5 + 2{,}130[1 - .3(.03009) + .01436]^{T}$$

$$CNQDRH + .0773\ CNPDR = 18.01 + 60[1 + .15(.03009) + .01436]^{T}$$

$$\begin{aligned} CNQDGF &- 4.6\ CNQSB - 6.5\ CNQSP - 2.9\ CNQSZ - .33\ CNQSL - 3.1\ CNQSE - 5.627\ CNPSB - 5.529\ CNPSP \\ &+ 115.5\ CNPDC - 12.90\ CNPDK = - 16{,}019.2 + 15{,}305[1 + .002]^{T} \end{aligned}$$

$$CNQDWF - .145\ CNQDGF + 17.53\ CNPDW - 17.53\ CNPDC = 182.04$$

$$CNQDCF + CNQDWF - CNQDGF = 0$$

$$\begin{aligned} CNQDKF &- .1\ CNQSB - .35\ CNQSP - .6\ CNQSZ - .03\ CNQSL - .35\ CNQSE - 1.132\ CNPSP - 41.05\ CNPDC \\ &+ 7.167\ CNPDK = - 3{,}027.88 + 870[1 + .005]^{T} \end{aligned}$$

Supply Equations

$$CNQSB - .5182\ CNPSB + .1273\ CNPSP + 3.325\ CNPDC + .3713\ CNPDK = -44.05 + 881[1 + .035]^{T}$$

$$CNQSP + .1768\ CNPSB - .5211\ CNPSP + .2719\ CNPDZ + 4.537\ CNPDC + .5066\ CNPDK = 180.32 + 601[1 + .019]^{T}$$

$$CNQSZ + .0631\ CNPSB + .1240\ CNPSP - .6794\ CNPSZ + 3.238\ CNPDC + .7232\ CNPDK = 85.81 + 429[1 + .0380]^{T}$$

$$CNQSE = 329[1 + .01436]^{T}$$

$$CNQSL - 20.57\ CNPSL + 62.53\ CNPDC + 13.97\ CNPDK = 2{,}485.66 + 8{,}284[1 + .019]^{T}$$

$$CNQSLC - .0530\ CNPSLC + .0420\ CNPDLB = + .02 + 101[1 + .6(.03009) + .01436]^{T}$$

$$CNQSL - CNQDLM - 23.25\ CNQSLB - 11.208\ CNQSLC = 0$$

$$CNHAT - 79.42\ CNPSW - 218.2\ CNPTW = + 1{,}977.63$$

$$CNHAW - 95.52\ CNPSW + 79.40\ CNPSC + 13.61\ CNPSK - .523\ CNHAT = - 817.0 - 75\ T$$

$$CNHAC + 87.00\ CNPSW - 93.33\ CNPSC + 11.65\ CNPSK - .357\ CNHAT = 1{,}995.97 + 50\ T$$

$$CNHAK + 8.52\ CNPSW + 13.93\ CNPSC - 25.26\ CNPSK - .120\ CNHAT = - 1{,}178.97 + 25\ T$$

$$CNQSW - 48.57\ CNPSW - 1.75\ CNHAW = 805.1 - 32.2\ CNZI + 390\ T$$

$$CNQSC - 55.99\ CNPSC - 2.20\ CNHAC = 861.86 - 34.6\ CNZI + 590\ T$$

$$CNQSK - 2.576\ CNPSK - .487\ CNHAK = - 65.11 - 1.96\ CNZI + 30\ T$$

Regional Equilibrium Conditions

$$- CNQSB + CNQDB + CNQTB = 0$$

$$- CNQSP + CNQDP + CNQTP = 0$$

$$- CNQSZ + 1.0023\ CNQDZ = 0$$

Continued

Regional Equilibrium Conditions (Continued)

$- CNQSLB + CNQDLB + CNQTLB = 0$

$- CNQSLC + CNQDLC + CNQTLC = 0$

$- CNQSW + CNQDWH + CNQDWF + CNQTW = 0$

$- CNQSC + CNQDCH + CNQDCF + CNQTC = 0$

$CNQDRH + CNQTR = 0$

$- CNQSK + CNQDKF + CNQTK = 0$

Supply-Demand Price Equations

$CNPSB - CNPDB = 0$

$CNPSP - CNPDP = 0$

$CNPSZ - CNPDZ = 0$

$CNPSW - CNPDW = - 13.61$

$CNPSC - CNPDC = - 6.64$

$CNPSK - CNPDK = - 17.33$

$CNPDLM = 142.27[1 + .05(.03009)]^T$

$CNPSLB - .0430\ CNPDLB = 41.294$

$CNPSLC - .08922\ CNPDLC = 1.332$

Demand-Supply Price Equation

$CNPSL - .4480\ CNPDLM - .4154\ CNPSLB - .1366\ CNPSLC = 0$

Demand-Trade Price Equations

$CNPDB - CNPTB = 0$

$CNPDP - CNPTP = 0$

$CNPDW - CNPTW = 0$

$CNPDC - CNPTC = 0$

$CNPDK - CNPTK = 0$

$CNPDR - CNPTR = 0$

$CNPDLB - .5\ CNPTLB = 1{,}080.5$

$CNPDLC - .5\ CNPTLC = 528.5$

Demand Equations

$C6QDB + 2.6972\ C6PDB - 1.6403\ C6PDP + .6907\ C6PDZ = 1{,}448.4 + 4{,}828[1 + .6(.03263) + .00580]^T$

$C6QDP - 1.994\ C6PDB + 4.528\ C6PDP - .8590\ C6PDZ = 899.3 + 4{,}997[1 + .5(.03263) + .00580]^T$

$C6QDZ - .5814\ C6PDB - 1.0855\ C6PDP + 2.934\ C6PDZ = 363.88 + 1{,}917[1 + 1.0(.03263) + .00580 + .005]^T$

$C6QDV - .0276\ C6PDB - .0392\ C6PDP + .0594\ C6PDV = -\ 11.46 + 231[1 + .00580]^T$

$C6QDLM + 76.52\ C6PDLM = 7{,}881.6 + 31{,}526[1 + .2(.03263) + .00580]^T$

$C6QDLB + 4799\ C6PDLB = 837.91 + 1{,}197[1 + .2(.03263) + .00580]^T$

$C6QDLC + .7591\ C6PDLC = 1{,}099.2 + 1{,}832[1 + .5(.03263) + .00580]^T$

$C6QDWH + 44.46\ C6PDW = 4{,}460.2 + 22{,}300[1 - .1(.03263) + .00580]^T$

$C6QDCH + 21.38\ C6PDC = 1{,}964.8 + 9{,}825[1 + .1(.03263) + .00580]^T$

$C6QDRH + .5425\ C6PDR = 181.19 + 604[1 + .2(.03263) + .00580]^T$

$C6QDGF - 1.3\ C6QSB - 3.6\ C6QSP - 2.7\ C6QSZ - .25\ C6QSV - .1248\ C6QSL - 3.1\ C6QSE - 30.92\ C6PSP + 253.67\ C6PDC - 45.72\ C6PDK = -\ 51{,}128.84 + 46{,}625[1 + .005]^T$

$C6QDWF - .185\ C6QDGF + 20\ C6PDW + 50\ C6PTW - 50\ C6PTC = 2{,}150.28$

$C6QDCF + C6QDWF - C6QDGF = 0$

$C6QDKF - .16\ C6QSB - .67\ C6QSP - 1.18\ C6QSZ - .0326\ C6QSL - .71\ C6QSE - 17.8\ C6PSP - 103.3\ C6PDC + 25.40\ C6PDK = -\ 30{,}474.74 + 10{,}546[1 + .004]^T$

Supply Equations

$C6QSB - 2.27\ C6PSB + .8785\ C6PSP - 6.431\ C6PSL + 9.6104\ C6PDC + 4.3307\ C6PDK = -\ 441.6 + 4{,}416[1 + .02]^T$

$C6QSP + 1.952\ C6PSB - 4.698\ C6PSP + 3.098\ C6PSZ + 22.028\ C6PDC + 9.926\ C6PDK = 2{,}530.9 + 5{,}091[1 + .024]^T$

$C6QSZ + .494\ C6PSB + .509\ C6PSP - 2.743\ C6PSZ + 8.356\ C6PDC + 5.649\ C6PDK = 768.0 + 1{,}920[1 + .044]^T$

$C6QSV + .0376\ C6PSB - .284\ C6PSL + .3183\ C6PDC - .0602\ C6PSV = 165.74$

$C6QSE = 2{,}576[1 + .00580]^T$

$C6QSL - 8.425\ C6QSB - 252.9\ C6PSL + 404.9\ C6PDC + 218.9\ C6PDK = -\ 3{,}721.96 + 74{,}412[1 + .003]^T$

$C6QSLC = 1{,}859[1 + .5(.03263) + .010]^T$

$C6QSL - C6QDLM - 22.935\ C6QSLB - 7.105\ C6QSLC = 0$

$C6HAT - 29.05\ C6PSC = -\ 2{,}192.7 + 21{,}925[1 - .75(.03263) + .025]^T$

$C6HAW - 71.32\ C6PSW + 91.67\ C6PSC - .435\ C6HAT = 347.41 - 80\ T$

$C6HAC + 71.32\ C6PSW - 91.67\ C6PSC - .530\ C6HAT = -\ 295.035 + 80\ T$

$C6HAR - .2157\ C6PSR = -\ 38.791 + 194[1 + .003]^T$

$C6QSW - 81.26\ C6PSW - 3.19\ C6HAW = -\ 1.574.99 - 63.07\ C6ZI + 875\ T$

$C6QSC - 156.18\ C6PSC - 3.47\ C6HAC = -\ 3{,}932.2 - 78.59\ C6ZI + 1{,}260\ T$

$C6QSR - .735\ C6PSR - 3.41\ C6HAR = 65.58 - 1.983\ C6ZI + 6\ T$

$C6QSK = 549 + 10\ T$

Regional Equilibrium Conditions

$-\ C6QSB + C6QDB + C6QTB = 0$

$-\ C6QSP + C6QDP + C6QTP = 0$

$-\ C6QSZ + C6QDZ + C6QTZ = 0$

Continued

Regional Equilibrium Conditions (Continued)

- C6QTZ - C3QTZ = - 44.0

- C6QSV + C6QDV + C6QTV = 0

- C6QSLB + C6QDLB + C6QTLB = 0

- C6QSLC + C6QDLC + C6QTLC = 0

- C6QSW + C6QDWH + C6QDWF + C6QTW = 0

- C6QSC + C6QDCH + C6QDCF + C6QTC = 0

- C6QSR + C6QDRH + C6QTR = 0

- C6QSK + C6QDKF + C6QTK = 0

Supply-Demand Price Equations

$$C6PSB - .7\ C6PDB = 100.9 - 200[1 + .2(.03263)]^T$$

$$C6PSP - .8\ C6PDP = 197.6 - 150[1 + .2(.03263)]^T$$

$$C6PSZ - .7\ C6PDZ = 150.7 - 150[1 + .1(.03263)]^T$$

$$C6PSV - C6PDV = 0$$

$$C6PSL - .1324\ C6PSB = - .3\ T$$

$$C6PSW - C6PDW = - 3.30$$

Demand-Supply Price Equations

$$C6PDLM - C6PSL = 0$$

$$C6PDLB - 22.935\ C6PSL = - 616.305$$

$$C6PDLC - 7.105\ C6PSL = 716.185$$

Demand-Trade Price Equations

$$C6PDB - C6PTB - C6PLB = 0 + 209[1 + .3(.03263)]^T$$

$$C6PDP - C6PTP - C6PLP = - 150.0 + 150[1 + .3(.03263)]^T$$

$$C6PDV - 1.2\ C3PTV = 0 + 134.4[1 + .3(.03263)]^T$$

$$C6PDW - C6PTW - C6PLW = - 21.82$$

$$C6PDC - C6PTC - C6PLC = - 5.63 + .3\ T$$

$$C6PDR - C6PTR - C6PLR = 2.64$$

$$C6PDK - C6PTK = 0$$

Price Equations Variable Levy

$$C6PLB + .2\ C6PTB = 159.0 + 249[1 + .3(.03263)]^T$$

$$C6PLP + .2\ C6PTP = 117.2 + 297[1 + .3(.03263)]^T$$

$$C6PLW + .2\ C6PTW = 13.04 + 45[1 + .1(.03263)]^T$$

$$C6PLC + .2\ C6PTC = 12.36 + 29[1 + .1(.03263)]^T$$

$$C6PLR + .2\ C6PTR = 30.91 + 100[1 + .1(.03263)]^T$$

Regional Price Equations

$$C3PDZ - 1.4\ C6PSZ = - 127.4 + 77.4\ DVZ + 3\ T$$

Demand Equations

$$C3QDB + 1.083\ C3PDB - .3641\ C3PDP - .2174\ C3PDZ + .4361\ C3PDV = 791.24 + 1{,}522[1 + .7(.01989) + .0041 + .01]^T$$

$$C3QDP - .3954\ C3PDB + 1.7722\ C3PDP - .6614\ C3PDZ - .4511\ C3PDV = 462.98 + 1{,}852[1 + .45(.01989) + .0041]^T$$

$$C3QDZ - .2295\ C3PDB - .2314\ C3PDP + .6911\ C3PDZ = 0 + 645[1 + 1.0(.01989) + .0041]^T$$

$$C3QDV - .0721\ C3PDB - .0727\ C3PDP - .1086\ C3PDZ + .0871\ C3PDV = -\ 121.58 + 608[1 - .30(.01989) + .0041]^T$$

$$C3QDLM + 19.045\ C3PDLM = 1{,}866.45 + 12{,}443[1 + .2(.01989) + .0041]^T$$

$$C3QDLB + .3239\ C3PDLB = 281.46 + 563[1 + .2(.01989) + .0041]^T$$

$$C3QDLC + .2664\ C3PDLC = 214.19 + 357[1 + .3(.01989) + .0041]^T$$

$$C3QDWH + 17.17\ C3PDW = 1{,}244.3 + 6{,}225[1 - .2(.01989) + .0041]^T$$

$$C3QDCH + 19.35\ C3PDC = 1{,}184.6 + 4{,}739[1 + .05(.01989) + .0041]^T$$

$$C3QDRH + .2620\ C3PDR = 43.49 + 145[1 + .2(.01989) + .0041]^T$$

$$C3QDGF - 2.27\ C3QSB - 4.22\ C3QSP - 2.70\ C3QSZ - .25\ C3QSV - .21\ C3QSL - 3.1\ C3QSE - 12.13\ C3PSP + 165.68\ C3PDC - 18.96\ C3PDK = -\ 21{,}198.97 + 20{,}286[1 + .002]^T$$

$$C3QDWF - .175\ C3QDGF + 15\ C3PDW - 15\ C3PDC = 143.70$$

$$C3QDCF + C3QDWF - C3QDGF = 0$$

$$C3QDKF - .12\ C3QSB - .55\ C3QSP - 1.05\ C3QSZ - .025\ C3QSL - .6\ C3QSE - 6.73\ C3PSP - 49.46\ C3PDC + 10.53\ C3PDK = -\ 10{,}539.75 + 3{,}028[1 + .005]^T$$

Supply Equations

$$C3QSB - .6329\ C3PSB + .2394\ C3PSP - 2.106\ C3PSL + 4.358\ C3PDC + 1.247\ C3PDK = -\ 133.3 + 1{,}334[1 + .025]^T$$

$$C3QSP + .3271\ C3PSB - 1.539\ C3PSP + .4923\ C3PSZ + 12.009\ C3PDC + 3.436\ C3PDK = 367.57 + 1{,}838[1 + .029]^T$$

$$C3QSZ + .1627\ C3PSB + .1641\ C3PSP - .8575\ C3PSZ + 4.482\ C3PDC + 1.924\ C3PDK = 274.34 + 686[1 + .025]^T$$

$$C3QSV + .0475\ C3PSB - .4087\ C3PSL + .6542\ C3PDC - .1147\ C3PSV = 226.95$$

$$C3QSE = 1{,}002[1 + .0041]^T$$

$$C3QSL - 76.55\ C3PSL + 67.88\ C3PDC + 19.424\ C3PDK = -\ 1{,}038.85 + 20{,}778[1 + .0073]^T$$

$$C3QSLC = 281[1 + .3(.01989) + .0041]^T$$

$$C3QSL - C3QDLM - 21.478\ C3QSLB - 8.719\ C3QSLC = 0$$

$$C3HAT - 12.524\ C3PSC = 4{,}892.0 + 20\ T$$

$$C3HAW - 9.614\ C3PSW + 9.695\ C3PSC - .211\ C3HAT = -\ 60.06 + 5\ T$$

$$C3HAC + 9.614\ C3PSW - 9.695\ C3PSC - .789\ C3HAT = 60.06 - 5\ T$$

$$C3QSW - 13.464\ C3PSW - 4.20\ C3HAW = -\ 10.21\ C3ZID + 2.025 + 16\ T$$

$$C3QSC - 48.469\ C3PSC - 3.68\ C3HAC = -\ 33.41\ C3ZID - 2.168 + 226\ T$$

$$C3QSK - 1.017\ C3PSK = 533.12 + 10\ T$$

Regional Equilibrium Conditions

$$-\ C3QSB + C3QDB + C3QTB = 0$$

$$-\ C3QSP + C3QDP + C3QTP = 0$$

$$-\ C6QTZ - C3QTZ = -\ 44.0$$

Continued

Regional Equilibrium Conditions (Continued)

- C3QSZ + C3QDZ + C3QTZ = 0

- C3QSV + C3QDV + C3QTV = 0

- C3QSLB + C3QDLB + C3QTLB = 0

- C3QSLC + C3QDLC + C3QTLC = 0

- C3QSW + C3QDWH + C3QDWF + C3QTW = 0

- C3QSC + C3QDCH + C3QDCF + C3QTC = 0

C3QDRH + C3QTR = 0

- C3QSK + C3QDKF + C3QTK = 0

Supply-Demand Price Equations

C3PSB - C3PDB = 0

C3PSP - C3PDP = 0

C3PSZ - C3PDZ = 0

C3PSV - C3PDV = 0

C3PSW - C3PDW = 3.36 - 13.36 C3DVW

C3PSC - C3PDC = 7.71 - 17.71 C3DVC

C3PSL - C3PDLM = - 3

C3PSK - C3PDK = 0

Regional Price Equations

C3PDB - C6PDB = - 410 + 410 C3DVB

C3PDP - C3PDP = - 47 + 47 C3DVP

C3PDV - C6PDV = - 274 + 274 C3DVP

C3PDW - C6PDW = - 27.85 + 27.85 C3DVW

C3PDC - C6PDC = - 30.68 + 30.68 C3DVC

C3PDR - C6PDR = - 168.00 + 168.00 C3DVR

C3PDLB - C6PDLB = - 877 + 877 C3DVLB

C3PDLC - C6PDLC = - 644 + 644 C3DVLC

C3PSL - C6PSL = - 8 + 8 C3DVL

C3PDK - C6PTK = 5.0

Demand Equations

$$\mathrm{WEQDB} + .5986\ \mathrm{WEPDB} - .2831\ \mathrm{WEPDP} - .1788\ \mathrm{WEPDZ} = 375.1 + 1{,}250[1 + .7(.04161) + .00615]^{T}$$

$$\mathrm{WEQDP} - .2370\ \mathrm{WEPDB} + 1.177\ \mathrm{WEPDP} - .4249\ \mathrm{WEPDZ} = 445.32 + 1{,}485[1 + .6(.04161) + .00615]^{T}$$

$$\mathrm{WEQDZ} - .0460\ \mathrm{WEPDB} - .1305\ \mathrm{WEPDP} + .6592\ \mathrm{WEPDZ} = 287.91 + 576[1 + .9(.04161) + .00615]^{T}$$

$$\mathrm{WEQDV} - .0383\ \mathrm{WEPDB} - .0544\ \mathrm{WEPDP} + .0823\ \mathrm{WEPDV} = - 16.03 + 320[1 + .00615]^{T}$$

$$\mathrm{WEQDLM} + 12.24\ \mathrm{WEPDLM} = 2{,}594.9 + 12{,}971[1 + .3(04161) + .00615]^{T}$$

$$\mathrm{WEQDLB} + .0683\ \mathrm{WEPDLB} = 121.92 + 244[1 + .3(.04161) + .00615]^{T}$$

$$\mathrm{WEQDLC} + .1484\ \mathrm{WEPDLC} = 222.0 + 370[1 + .6(.04161) + .00615]^{T}$$

$$\mathrm{WEQDWH} + 21.46\ \mathrm{WEPDW} - 11.32\ \mathrm{WEPDC} = 1{,}341.0 + 8{,}940[1 - .05(.04161) + .00615]^{T}$$

$$\mathrm{WEQDCH} - 5.439\ \mathrm{WEPDW} + 16.73\ \mathrm{WEPDC} = 755.14 + 3{,}777[1 + .10(.04161) + .00615]^{T}$$

$$\mathrm{WEQDRH} - 1.104\ \mathrm{WEPDW} + 1.065\ \mathrm{WEPDR} = 57.54 + 575[1 + .2(.04161) + .00615]^{T}$$

$$\mathrm{WEQDGF} - 2.46\ \mathrm{WEQSB} - 4.6\ \mathrm{WEQSP} - 2.8\ \mathrm{WEQSZ} - .28\ \mathrm{WEQSL} - 10.70\ \mathrm{WEPSP} + 127.68\ \mathrm{WEPDC} - 18.86\ \mathrm{WEPDK} = 2.27 + 3{,}120[1 + .00615]^{T}$$

$$\mathrm{WEQDWF} - .092\ \mathrm{WEQDGF} + 8.929\ \mathrm{WEPDW} - 9.418\ \mathrm{WEPDC} = 190.11$$

$$\mathrm{WEQDCF} - \mathrm{WEQDGF} + \mathrm{WEQDWF} = 0$$

$$\mathrm{WEQDKF} - .15\ \mathrm{WEQSB} - .65\ \mathrm{WEQSP} - 1.16\ \mathrm{WEQSZ} - .028\ \mathrm{WEQSL} - 3.914\ \mathrm{WEPSP} - 44.83\ \mathrm{WEPDC} + 5.517\ \mathrm{WEPDK} = - 5\ 902.62 + 594[1 + .00615]^{T} + 30\ T$$

Supply Equations

$$\mathrm{WEQSB} - .545\ \mathrm{WEPSB} + .2109\ \mathrm{WEPSP} + 2.684\ \mathrm{WEPDC} - 1.331\ \mathrm{WEPSL} + .9909\ \mathrm{WEPDK} = - 105.93 + 1{,}060[1 + .031]^{T}$$

$$\mathrm{WEQSP} + .3838\ \mathrm{WEPSB} - .9901\ \mathrm{WEPSP} + .6094\ \mathrm{WEPSZ} + 5.670\ \mathrm{WEPDC} + 2.094\ \mathrm{WEPDK} = 522.6 + 1{,}493[1 + .020]^{T}$$

$$\mathrm{WEQSZ} + .1373\ \mathrm{WEPSB} + .1416\ \mathrm{WEPSP} - .6539\ \mathrm{WEPSZ} + 2.028\ \mathrm{WEPDC} + 1.248\ \mathrm{WEPDK} = 186.9 + 534[1 + .060]^{T}$$

$$\mathrm{WEQSV} - .0526\ \mathrm{WEPSB} - .0843\ \mathrm{WEPSV} + .5184\ \mathrm{WEPDC} - 3{,}428\ \mathrm{WEPSL} = - 41.01 + 273[1 + .006]^{T}$$

$$\mathrm{WEQSL} - 54.55\ \mathrm{WEPSL} + 96.23\ \mathrm{WEPDC} + 20.30\ \mathrm{WEPDK} = 3{,}258.2 + 21{,}720[1 + .015]^{T}$$

$$\mathrm{WEQSLC} - .1447\ \mathrm{WEPSLC} = - 216.47 + 433[1 + .6(.04161) + .0075]^{T}$$

$$\mathrm{WEQSL} - \mathrm{WEQDLM} - 19.656\ \mathrm{WEQSLB} - 8.5843\ \mathrm{WEQSLC} = 0$$

$$\mathrm{WEHAT} - 32.50\ \mathrm{WEPSC} = 11{,}903.98 + 21\ T$$

$$\mathrm{WEHAW} - 15.60\ \mathrm{WEPSW} + 16.65\ \mathrm{WEPSC} - .410\ \mathrm{WEHAT} = - .748 - 49\ T$$

$$\mathrm{WEHAC} + 15.60\ \mathrm{WEPSW} - 16.65\ \mathrm{WEPSC} + .5095\ \mathrm{WEPSK} - .554\ \mathrm{WEHAT} = 45.93 + 39\ T$$

$$\mathrm{WEHAR} - .1762\ \mathrm{WEPSR} = 102.85$$

$$\mathrm{WEHAK} - .5095\ \mathrm{WEPSK} + .036\ \mathrm{WEHAT} = 1{,}026.2 + 10\ T$$

$$\mathrm{WEQSW} - 25.27\ \mathrm{WEPSW} - 1.62\ \mathrm{WEHAW} = - 989.64 + 213\ T - 14.82\ \mathrm{WEZI}$$

$$\mathrm{WEQSC} - 59.22\ \mathrm{WEPSC} - 2.195\ \mathrm{WEHAC} = 2{,}712.6 + 250\ T - 27.11\ \mathrm{WEZI}$$

$$\mathrm{WEQSR} - .6553\ \mathrm{WEPSR} - 3.719\ \mathrm{WEHAR} = 0 + 4\ T - .675\ \mathrm{WEZI}$$

$$\mathrm{WEQSK} - 1.000\ \mathrm{WEPSK} - .587\ \mathrm{WEHAK} = 803.62 + 4\ T - 1.605\ \mathrm{WEZI}$$

Regional Equilibrium Conditions

$$- \mathrm{WEQSB} + \mathrm{QDB} + \mathrm{WEQTB} = 0$$

$$- \mathrm{WEQSP} + \mathrm{WEQDP} + \mathrm{WEQTP} = 0$$

Continued

Regional Equilibrium Conditions (Continued)

- WEQSZ + .9271 WEQDZ = 0

- WEQSV + WEQDV + WEQTV = 0

- WEQSLB + WEQDLB + WEQTLB = 0

- WEQSLC + WEQDLC + WEQTLC = 0

- WEQSW + WEQDWH + WEQDWF + WEQTW = 0

- WEQSC + WEQDCH + WEQDCF + WEQTC = 0

- WEQSR + WEQDRH + WEQTR = 0

- WEQSK + WEQDKF + WEQTK = 0

Supply-Demand Price Equations

$$WEPSB - .7\ WEPDB = 100.9 - 200[1 + .2(.04161)]^{T}$$

$$WEPSP - .8\ WEPDP = 197.6 - 150[1 + .2(.04161)]^{T}$$

$$WEPSZ - .7\ WEPDZ = 150.7 - 150[1 + .1(.04161)]^{T}$$

WEPSV - WEPDV = 0

WEPSW - WEPDW = - 6.43

WEPSC - WEPDC = 12.57

WEPSR - WEPDR = - 59.0

WEPSK - WEPDK = 0

WEPSL - WEPDLM = - 92.56

Demand-Supply Price Equations

WEPDLC - WEPSLC = 0

WEPDLB - 19.656 WEPSL = - 562.71

Demand-Trade Equations

WEPDR - 1.0(1.0) WEPTR = 0

WEPDLC - 1.0(1.0) WEPTLC = - 59

WEPDLB - 1.0(1.0) WEPTLB = 0

Price Connections to C6

WEPDB - C6PDB = 0

WEPDP - C6PDP = 0

WEPDV - C6PDV = 0

WEPDW - C6PDW = 3.84

WEPDC - C6PDC = - 12.9

WEPDK - C6PDK = 5.0

Demand Equations

$$JPQDB + .2529\ JPPDB - .0812\ JPPDP - .1349\ JPPDZ = 172.8 + 293[1 + 1.2(.05452) + .01073 + .02]^T$$

$$JPQDP - .096\ JPPDB + .640\ JPPDP - .0965\ JPPDZ = 393.54 + 667[1 + .9(.05452) + .01073 + .02]^T$$

$$JPQDZ - .1759\ JPPDB - .0886\ JPPDP + .7078\ JPPDZ = 210.32 + 489[1 + .6(.05452) + .01073 + .01]^T$$

$$JPQDV + .0475\ JPPDB - .0352\ JPPDP - .0651\ JPPDZ + .4330\ JPPDV = 49.53 + 165[1 + .5(.05452) + .01073]^T$$

$$JPQDLM + 18.39\ JPPDLM = 2{,}420.3 + 3{,}458[1 + .95(.05452) + .01073]^T$$

$$JPQDLB + .0484\ JPPDLB = 31.85 + 45.5[1 + 1.0(.05452) + .01073]^T$$

$$JPQDLC + .1187\ JPPDLC = 72.41 + 42.9[1 + 1.25(.05452) + .01073]^T$$

$$JPQDWH + 61.88\ JPPDW - 7.309\ JPPDR = 1{,}257.7 + 5{,}030[1 + .2(.05452) + .01073]^T + 50\ T$$

$$JPQDCH + 18.57\ JPPDC = 466.66 + 1{,}867[1 + .2(.05452) + .01073]^T$$

$$JPQDR - 32.00\ JPPDW + 12.76\ JPPDR = 585.47 + 11{,}706[1 - .2(.05452) + .01073]^T$$

$$JPQDKH - .8\ JPQDSH + .8\ JPQSS = 0$$

$$JPQDSH + 2.498\ JPPDS - .2215\ JPPDP = -\ 103.88 + 1{,}039[1 + .8(.01073)]^T$$

$$JPQDGF - 2.33\ JPQSB - 5.09\ JPQSP - 2.4\ JPQSZ - .2\ JPQSL - 2.4\ JPQSE - 19.01\ JPPSP + 242.4\ JPPDC - 19.53\ JPPDK = -\ 10{,}119.9 + 10{,}153[1 + .005]^T + 200\ T$$

$$JPQDCF - JPQDGF - 700\ JPDVC = -\ 905$$

$$JPQDKF - .5\ JPQSB - 1.4\ JPQSP - 1.2\ JPQSZ - .08\ JPQSL - .7\ JPQSE - 17.537\ JPPSP - 142.6\ JPPDC + 18.76\ JPPDK = -\ 10{,}482.84 + 3{,}124[1 + .01]^T$$

Supply Equations

$$JPQSB - .2939\ JPPSB + .094\ JPPSP + .1307\ JPPSZ + 2.9964\ JPPDC - 1.0393\ JPPSL = -\ 50.2 + 251[1 + .02]^T + 25\ T$$

$$JPQSP - 1.6648\ JPPSP + .6615\ JPPSZ + 10.107\ JPPDC + 2.4428\ JPPDK + 1.972\ JPPSL = 158.75 + 635[1 + .02]^T + 80\ T$$

$$JPQSZ + .3558\ JPPSP - 1.7318\ JPPSZ + 7.5607\ JPPDC + 2.741\ JPPDK = 95 + 475[1 + .05]^T$$

$$JPQSE = 1{,}760[1 + .01073]^T$$

$$JPQSL - 77.80\ JPPSL + 46.73\ JPPDC + 27.10\ JPPDK = -\ 1{,}174.5 + 4{,}697[1 + .050]^T$$

$$JPQSLC = 9.83[1 + 1.25(.05452) + .01073]^T$$

$$JPQSL - JPQDLM - 25.36\ JPQSLB - 9.56\ JPQSLC = 0$$

$$JPHAT - 1.179\ JPPSR = 3{,}456.07 - 52\ T$$

$$JPHAW - .062\ JPHAT = -\ .556 - 3.9\ T$$

$$JPHAC - .073\ JPHAT = -\ .574 - 1.8\ T$$

$$JPHAR + 1.212\ JPPSS - .233\ JPPSR - .8160\ JPHAT = 13.845 - 5.4\ T$$

$$JPHAS - 1.212\ JPPSS + .233\ JPPSR - .049\ JPHAT = -\ 12.715 + 11.1\ T$$

$$JPQSW - 2.816\ JPPSW - 2.45\ JPHAW = -\ 111.27 - .55\ JPZI + 4\ T$$

$$JPQSC - 2.745\ JPPSC - 2.73\ JPHAC = -\ 107.2 - .725\ JPZI + 3\ T$$

$$JPQSR - 11.08\ JPPSR - 3.84\ JPHAR = 573.13 - 22.8\ JPZI + 48\ T$$

$$JPQSK - 1.881\ JPPSK = 880.21 + 15\ T$$

$$JPQSS - .8115\ JPPSS - 1.25\ JPHAS = 0 - .3375\ JPZI + 5.1\ T$$

Continued

Regional Equilibrium Conditions

$$- JPQSB + JPQDB + JPQTB = 0$$

$$- JPQSP + JPQDP + JPQTP = 0$$

$$- JPQSZ + .9714\ JPQZ = 0$$

$$JPQDV + JPQTV = 0$$

$$- JPQSLB + JPQDLB + JPQTLB = 0$$

$$- JPQSLC + JPQDLC + JPQTLC = 0$$

$$- JPQSW + JPQDWH + JPQTW = 0$$

$$- JPQSC + JPQDCH + JPQDCF + JPQTC = 0$$

$$- JPQSR + JPQDR = 106$$

$$- JPQSK + JPQDKH + JPQDKF + JPQTK = 0$$

Supply-Demand Price Equations

$$JPPSB - .65\ JPPDB = - 476.5[1 + .1(.05452)]^T$$

$$JPPSP - .8\ JPPDP = - 483.4[1 + .03(.05452)]^T$$

$$JPPSZ - .7\ JPPDZ = - 340$$

$$JPPSL - JPPDLM = - 83.31[1 + .1(.05452)]^T$$

$$JPPSW - JPPDW = 22.02$$

$$JPPSC - JPPDC = 40.90$$

$$JPPSR - JPPDR = 16.69$$

$$JPPSS - JPPDS = 0$$

$$JPPSK - JPPDK = 0$$

Demand-Supply Price Equations

$$JPPDLB - 25.36\ JPPSL = - 566.89$$

$$JPPSS - .8\ JPPDK = 0$$

Demand-Trade Price Equations

$$JPPDB - .4\ JPPTB = 199.30 + 1{,}058[1 + .1(.05452)]^T$$

$$JPPDP - .4\ JPPTP = 768.35$$

$$JPPDV - 1.0\ JPPTV = .09$$

$$JPPDLB - 1.0\ JPPTLB = 411.97$$

$$JPPDLC - 1.0\ JPPTLC = 392.22$$

$$JPPDW - 1.0\ JPPTW = 13.06$$

$$JPPDC - 1.0\ JPPTC = .398$$

$$JPPDK - 1.0\ JPPTK = 0$$

Demand Equations

$AZQDB + .5477\ AZPDB - .3554\ AZPDV = 196.20 + 654[1 + .01769]^{T}$

$AZQDP - .0693\ AZPDB + .15\ AZPDP = 41.43 + 207[1 + .1(.02913) + .01769]^{T}$

$AZQDV - .4047\ AZPDB + 1.3130\ AZPDV = 241.60 + 604[1 - .3(.02913) + .01769]^{T}$

$AZQDLM + 6.589\ AZPDLM = 643.02 + 3{,}215[1 + .1(.02913) + .01769]^{T}$

$AZQDLB + .0650\ AZPDLB = 69.55 + 174[1 - .1(.02913) + .01769]^{T}$

$AZQDLC + .0272\ AZPDLC = 17.98 + 60[1 + .5(.02913) + .01769]^{T}$

$AZQDWH + 5.841\ AZPDW = 328.54 + 2{,}190[1 - .25(.02913) + .01769]^{T}$

$AZQDCH + 4.404\ AZPDC = 147.75 + 985[1 - .2(.02913) + .01769]^{T}$

$AZQDRH + .0412\ AZPDR = 6.14 + 61[1 + .1(.02913) + .01769]^{T}$

$AZQDGF - .3\ AZQSB - 3.4\ AZQSP - 3.0\ AZQSZ - .12\ AZQSL - 3.0\ AZQSE - 1.53\ AZPSP + 25.13\ AZPDC = - 3{,}953.7 + 2{,}810[1 + .002]^{T}$

$AZQDWF + 4.321\ AZPDW - .29\ AZQGF = 238.1$

$AZQDCF + AZQDWF - AZQDGF = 0$

$AZQDK + .3478\ AZPDK = 45.60 + 152[1 + .02]^{T}$

Supply Equations

$AZQSB - .9279\ AZPSB + .3764\ AZPSV = - 415.5 + 1{,}385[1 + .03]^{T}$

$AZQSP + .03551\ AZPSB - .1152\ AZPSP + 1.2638\ AZPDC = 0 + 212[1 + .005]^{T}$

$AZQSZ = 153[1 + .7(.02913) + .01769]^{T}$

$AZQSV - .7163\ AZPSV = - 263.6 + 1.318[1 + .022]^{T}$

$AZQSE = 236[1 + .01769]^{T}$

$AZQSL - 133.3\ AZPSL + 81.91\ AZPDC = - 2{,}749.21 + 13{,}741[1 + .01]^{T}$

$AZQSLC - .2693\ AZPDLC + .1664\ APQDLB = .0407 + 178[1 + .5(.02913) + .01769]^{T}$

$AZQSL - AZQDLM - 19.794\ AZQSLB - 9.539\ AZQSLC = 0$

$AZHAT - 44.76\ AZPSW - 197.35\ AZPTW = - .3487 + 193\ T$

$AZHAW - 57.58\ AZPSW + 81.89\ AZPSC - .642\ AZHAT = - 378.04$

$AZHAC + 57.58\ AZPSW - 81.89\ AZPSC - .342\ AZHAT = 378.3 - 11\ T$

$AZHAR - .072\ AZPSR = 33.33 + 2\ T$

$AZHAK - .446\ AZPSK - .016\ AZHAT = - 58.75 + 11\ T$

$AZQSW - 25.91\ AZPSW - 1.20\ AZHAW = .1399 - 14.13\ AZZI\varnothing + 160\ T$

$AZQSC - 24.18\ AZPSC - 1.30\ AZHAC = - .04 - 8.112\ AZZI\varnothing + 115\ T$

$AZQSR - .3745\ AZPSR - 5.16\ AZHAR = .08 - .191\ AZZI\varnothing$

$AZQSK - .069\ AZPSK - .31\ AZHAK = 3.50 - .06\ AZZI\varnothing + 2.4\ T$

Regional Equilibrium Conditions

$- AZQSB + AZQDB + AZQTB = 0$

$- AZQSP + 1.024\ AZQDP = 0$

$- AZQSV + AZQDV + AZQTB = 0$

Continued

Regional Equilibrium Conditions (Continued)

- AZQSLB + AZQDLB + AZQTLB = 0

- AZQSLC + AZQDLC + AZQTLC = 0

- AZQSW + AZQDWH + AZQDWF + AZQTW = 0

- AZQSC + AZQDCH + AZQDCF + AZQTC = 0

- AZQSR + AZQDRH + AZQTR = 0

- AZQSK + AZQDK + AZQTK = 0

Supply-Demand Price Equations

AZPSB - AZPDB = 0

AZPSP - AZPDP = 0

AZPSV - AZPDV = 0

AZPSL - .2340 AZPDLM - .6425 AZPSLR - .1236 AZPSLC = - 13.1981

AZPSLB - .05052 AZPDLB = - 12.8064

AZPSLC - .10483 AZPDLC = - 28.04

AZPSW - AZPDW = - 1.71

AZPSC - AZPDC = 0

AZPSR - .3 AZPDR = + 6.6

AZPSK - AZPDK = 0

Demand-Supply Equation

$$AZPDLM = 97.59[1 +(.02913)]^{T}$$

Demand-Trade Price Equations

AZPDB - .6406 AZPTB = 0

AZPDV - 1.0 AZPTV = 0

AZPDLB - 1.0 AZPTLB = 443.9

AZPDLC - 1.0 AZPTCL = 110.24

AZPDW - .5 AZPTW = 31.50

AZPDC - 1.0 AZPTC = -2.65

AZPDR - 1.0 AZPTR = 0

AZPDK - 1.0 AZPTK = 30.636

Demand Equations

$$SFQDWH + 1.878\ SFPDW - 2.251\ SFPDC = 65.71 + 1{,}315[1 + .1(.02383) + .02964]^T$$

$$SFQDCH - 1.016\ SFPDW + 4.870\ SFPDC = 177.82 + 3{,}556[1 - .05(.02383) + .02964]^T$$

$$SFQDRH + .1262\ SFPTR - 11.00\ SFPDW = 11.54 + 77[1 + .1(.02383) + .02964]^T$$

$$SFQDCF + 11.68\ SFPDC = 682.35 + 2{,}274[1 + .25(.02383) + .02964]^T$$

$$SFQDKF - .1869\ SFQDCF = 0$$

Supply Equations

$$SFHAT - 13.96\ SFPSC - 24.96\ SFPTC = 5{,}084.84 + 61\ T$$

$$SFHAW - 6.124\ SFPSW - .268\ SFHAT = -\ 732.87 + 15\ T$$

$$SFHAC - 27.39\ SFPTC + 17.71\ SFPSK - .732\ SFHAT = -\ 3.446 - 3\ T$$

$$SFQSW - 3.821\ SFPSW - .75\ SFHAW = -\ 221.48 + 34\ T - 1.46\ SFZI$$

$$SFQSC - 44.92\ SFPTC - 1.64\ SFHAC = -\ 1{,}742.8 + 150\ T - 8.715\ SFZI$$

$$SFQSK - .7600\ SFPTK = 615.6 + 15\ T$$

Regional Equilibrium Conditions

$$-\ SFQSW + SFQDWH + SFQTW = 0$$

$$-\ SFQSC + SFQDCH + SFQDCF + SFQTC = 0$$

$$SFQDRH + SFQDRH = 0$$

$$-\ SFQSK + SFQDKF + SFQTK = 0$$

Supply-Demand Price Equations

$$SFPSW - SFPDW = -\ 9.49$$

$$SFPSC - SFPTC = -\ 6.16$$

Demand-Trade Price Equations

$$SFPDW - SFPTW = 43.18$$

$$SFPDC - SFPTC = .22$$

EASTERN EUROPE--EE

Trade Equations

$$EEQTB - .0572\ C6PTB = -\ 45.47 + 91[1 + .4(.0452) + .007]^{T}$$

$$EEQTP - .0435\ C6PTP = -\ 25.49 + 51[1 + .3(.0452) + .007]^{T}$$

$$EEQTW + 17.03\ USPTW = 5{,}261.17 - 200\ T$$

$$EEQTC + 13.58\ USPTC = 3{,}775.15 + 1{,}550[1 + .3(.0452) + .007]^{T}$$

$$EEQTR + .8366\ THPTR = 128 + 256[1 + .3(.0452) + .007]^{T}$$

$$EEQTK + 15.26\ USPTK = 2{,}666.06 + 250\ T$$

SOVIET UNION--SV

Trade Equations

$$SVQTB + .0566\ C6PTB = -\ 154.00 + 150[1 + .4(.0478) + .0103]^{T}$$

$$SVQTW - 25.54\ USPTW = -\ 1{,}970.36$$

$$SVQTC + 13.14\ USPTC = 12{,}192.40$$

$$SVQTR + .6235\ THPTR = 413.40$$

$$SVQTK + 15.26\ USPTK = 1{,}500.06 + 230\ T$$

CHINA--CH

Trade Equations

$$CHQTP = 143.0 - 2\ T$$

$$CHQTW + 33.33\ USPTW = 4{,}342.57 + 3{,}915[1 + .0156]^{T}$$

$$CHQTC = 100.0 + 500[1 + .3(.0239) + .0156]^{T}$$

$$CHQTR - 2.866\ THPTR = 438.50 - 8\ T$$

$$CHQTK = -\ 200.0 - 20\ T$$

Demand Equations

$$MCQDB + .3715\ MCPDB - .0724\ MCPDP = 207.55 + 692[1 + .7(.02946) + .03103]^T$$

$$MCQDP - .0454\ MCPDB + .1061\ MCPDP = 67.61 + 338[1 + .6(.02946) + .03103]^T$$

$$MCQDWH + 8.482\ MCPDW - 1.252\ MCPDR - 4.879\ MCPDC = 285.44 + 2{,}855[1 + .35(.02946) + .03103]^T$$

$$MCQDCH - 4.280\ MCPDW + 22.97\ MCPDC = 1{,}512.12 + 10{,}083[1 + .1(.02946) + .03103]^T$$

$$MCQDRH - 1.447\ MCPDW + 1.495\ MCPDR - .4853\ MCPDC = 127.80 + 852[1 + .35(.02946) + .03103]^T$$

$$MCQDCF - .3\ MCQSB - 3.0\ MCQSP - .6301\ MCPSP + 6.863\ MCPDC = .1585 + 1{,}745[1 + .1(.02946) + .03103]^T$$

$$MCQDWF - .0315\ MCQDCF = 0$$

$$MCQDKF + 1.277\ MCPDK - 2.096\ MCPDC - .3054\ MCQDCF = .18$$

Supply Equations

$$MCQSB - .4526\ MCPSB + .0882\ MCPSP = - 252.87 + 843[1 + .0380]^T + 15\ T$$

$$MCQSP + .0454\ MCPSB - .1061\ MCPSP + 1.540\ MCPDC = 67.57 + 338[1 + .0380]^T$$

$$MCHAT - 39.96\ MCPSC = 10{,}309.6 + 95\ T$$

$$MCHAW - 4.616\ MCPSW + 2.907\ MCPSC + .3740\ MCPSK - .0582\ MCHAT = - 96.10 - 8\ T$$

$$MCHAC + 3.023\ MCPSW - 6.853\ MCPSC + 1.534\ MCPSK - .8575\ MCHAT = - .54 + 2\ T$$

$$MCHAR - .2685\ MCPSR - .0417\ MCHAT = - 80.94 + 2\ T$$

$$MCHAK + 1.593\ MCPSW + 3.946\ MCPSC - 1.908\ MCPSK - .0426\ MCHAT = 97.03 + 4\ T$$

$$MCQSW - 5.745\ MCPSW - 2.80\ MCHAW = - 2{,}520.02 + 45\ T + 2{,}100[1 + .75(0)]^T$$

$$MCQSC - 14.03\ MCPSC - 1.170\ MCHAC = - 13{,}833.43 + 400\ T + 12{,}930[1 + .75(0)]^T$$

$$MCQSR - .240\ MCPSR - 1.339\ MCHAR = - 791.04 + 6\ T + 719[1 + 1.125(0)]^T$$

$$MCQSK - .2744\ MCPSK - .7460\ MCHAK = - 449.8 + 7.75\ T + 791[1 + .3(0)]^T$$

Regional Equilibrium Conditions

$$- MCQSB + MCQDB + MCQTB = 0$$

$$- MCQSP + MCQDP + MCQTP = 0$$

$$- MCQSW + MCQDWH + MCQDWF + MCQTW = 0$$

$$- MCQSC + MCQDCH + MCQDCF + MCQTC = 0$$

$$- MCQSR + MCQDRH + MCQTR = 0$$

$$- MCQSK + MCQTK = 0$$

Supply-Demand Price Equations

$$MCPSB - MCPDB = 0$$

$$MCPSP - MCPDP = 0$$

$$MCPSW - MCPDW = - 44.69$$

$$MCPSC - MCPDC = - 23.28$$

$$MCPSR - MCPDR = 72.00$$

$$MCPSK - MCPDK = 0$$

Demand-Trade Price Equations

$$MCPDB - 1.0\ (1.0)\ MCPTB = 0$$

$$MCPDP - 1.0\ (1.0)\ MCPTP = 0$$

$$MCPDW - 1.0\ (1.0)\ MCPTW = 49.78$$

$$MCPDC - 1.0\ (1.0)\ MCPTC = 11.19$$

$$MCPDK - 1.0\ (1.0)\ MCPTK = 0$$

$$MCPDR - 1.0\ (1.0)\ MCPTR = 0$$

Demand Equations

$$ARQDB + .3179\ ARPDB = 746.11 + 1{,}865[1 + .2(.03125) + .01265]^T$$

$$ARQDP - .0183\ ARPDB + .0628\ ARPDP = 43.02 + 215[1 + .01265]^T$$

$$ARQDV - .0117\ ARPDB + .0323\ ARPDV = 27.4 + 137[1 + .01265]^T$$

$$ARQDW + 2.371\ ARPDW - .9225\ ARPDC = 211.26 + 4{,}225[1 - .1(.03125) + .01265]^T$$

$$ARQDCH - .3611\ ARPDW + .5620\ ARPDC = 64.35 + 1{,}287[1 - .25(.03125) + .01265]^T$$

$$ARQDRH - .0455\ ARPDW + .0873\ ARPDR = 24.28 + 162[1 + .15(.03125) + .01265]^T$$

$$ARQDCF - .5\ ARQSB - 3.6\ ARQSP - 1.128\ ARPSP + 6.744\ ARPDC = 0 + 3{,}101[1 + .2(.03125) + .01265]^T$$

$$ARQDK - .0472\ ARQDCF + .5000\ ARPDK + 121.49$$

Supply Equations

$$ARQSB - 1.169\ ARPSB = - 1{,}252.0 + 2{,}503[1 + .0150]^T$$

$$ARQSP + .0206\ ARPSB - .0484\ ARPSP + .1930\ ARPDC = 0 + 221[1 + .025]^T$$

$$ARQSV - .02157\ ARPSV = - 36.6 + 183[1 + .002]^T$$

$$ARHAT - 23.61\ ARPSC - 35.11\ ARPTC = 13.07 + 152\ T$$

$$ARHAW - 9.881\ ARPSW + 5.959\ ARPSC - .326\ ARHAT = - 400.7 - 20\ T$$

$$ARHAC + 7.993\ ARPSW - 8.887\ ARPSC + 4.156\ ARPSK - .502\ ARHAT = 397.6 + 18\ T$$

$$ARHAR - .0873\ ARPSR - .006\ ARHAT = - 15.84$$

$$ARHAK + 1.888\ ARPSW + 2.928\ ARPSC - 4.156\ ARPSK - .166\ ARHAT = - 2.8 + 2\ T$$

$$ARQSW - 3.297\ ARPSW - 1.335\ ARHAW = - 1.7 - 5.875\ ARZI + 138\ T$$

$$ARQSC - 8.59\ ARPSC - 1.933\ ARHAC = - 654.31 - 13.115\ ARZI + 125\ T$$

$$ARQSR - .1863\ ARPSR - 2.667\ ARHAR = - 23.22 - .232\ ARZI$$

$$ARQSK - .4263\ ARPSK - .462\ ARHAK = - .72 - 1.036\ ARZI + 7\ T$$

Regional Equilibrium Conditions

$$- ARQSB + ARQDB + ARQTB = 0$$

$$- ARQSP + 1.028\ ARQDP = 0$$

$$- ARQSV + ARQDV + ARQTV = 0$$

$$- ARQSW + ARQDW + ARQTW = 0$$

$$- ARQSC + ARQDCH + ARQDCF + ARQTC = 0$$

$$- ARQSR + ARQDRH + ARQTR = 0$$

$$- ARQSK + ARQDK + ARQTK = 0$$

Supply-Demand Price Equations

$$ARPSB - .5\ ARPDB = - 102.5$$

$$ARPSP - ARPDP = 0$$

$$ARPSV - ARPDV = 0$$

$$ARPSW - ARPDW = 0$$

Supply-Demand Price Equations (Continued)

$$ARPSC - ARPDC = 0$$

$$ARPSR - ARPDR = - 122.0$$

$$ARPSK - ARPDK = 0$$

Demand-Trade Price Equations

$$ARPDB - .57(3.75)\ ARPTB = - .12$$

$$ARPDV - (3.75)\ ARPTV = 0$$

$$ARPDW - (3.75)\ ARPTW = - 41.81$$

$$ARPDC - (3.57)\ ARPTC = - 1.625$$

$$ARPDR - (3.57)\ ARPTR = 0$$

$$ARPDK - (3.75)\ ARPTK = 0$$

Demand Equations

$$BZQDB + 1.632\ BZPDB - .7750\ BZPDP = 511.76 + 1{,}705[1 + .4(.05893) + .02848]^T$$

$$BZQDP - .1946\ BZPDB + .5545\ BZPDP = 243.96 + 610[1 + .4(.05893) + .02848]^T$$

$$BZCOW + 9.65\ BZPDW - 1.853\ BZPDR - 7.326\ BZPDC = 188.99 + 3{,}780[1 + .25(.05893) + .02848]^T$$

$$BZQDW - BZCOW - .5\ BZCORH + .5\ BZQSR = 0$$

$$BZQDCH - 1.659\ BZPDW - .7963\ BZPDR + 9.44\ BZPDC = 1162.45 + 3{,}249[1 + .10(.05893) + .02848]^T$$

$$BZCORH - 9.609\ BZPDW + 4.613\ BZPDR - 1.824\ BZPDC = -94.07 + 4{,}705[1 + .1(.05893) + .02848]^T$$

$$BZQDRH - .5\ BZCORH - .5\ BZQSR = 0$$

$$BZQDCF - 1.5\ BZQSB - 3.6\ BZQSP - 4.944\ BZPSP + 84.31\ BZPDC - 12.99\ BZPDK = -999.5 + 5{,}928[1 + .2(.05893) + .02848]^T$$

$$BZQDKF - .0642\ BZQDCF + 3.336\ BZPDK = 279.0 + 80\ T$$

Supply Equations

$$BZQSB - 1.461\ BZPDB = -916.05 + 1{,}832[1 + .0325]^T$$

$$BZQSP + .0974\ BZPSB - .3703\ BZPSP + 3.552\ BZPDC + 1.095\ BZPDK = 91.61 + 611[1 + .035]^T$$

$$BZHAT - 99.60\ BZPSC - 53.97\ BZPSK = 11{,}035.18 + 800\ T$$

$$BZHAW - 12.01\ BZPSW + 34.88\ BZPSC - .100\ BZHAT = .49 - 39\ T$$

$$BZHAC + 12.01\ BZPSW - 84.48\ BZPSC + 29.91\ BZPSK - .566\ BZHAT = 197.38 - 187\ T$$

$$BZHAR + 13.22\ BZPSC - 10.85\ BZPSR - .265\ BZHAT = -481.16 - 109\ T$$

$$BZHAK + 36.38\ BZPSC - 29.91\ BZPSK - .069\ BZHAT = 4306.8 + 455\ T$$

$$BZQSW - .8231\ BZPSW - .96\ BZHAW = -1{,}854.7 + 52\ T + 1{,}766[1 + .8(0)]^T$$

$$BZQSC - 39.43\ BZPSC - 1.40\ BZHAC = -16{,}016.15 + 405\ T + 14{,}560[1 + 1.3(0)]^T$$

$$BZQSR - 4.221\ BZPSR - .973\ BZHAR = -5{,}129.1 + 4{,}749[1 + 1.2(0)]^T + 60\ T$$

$$BZQSK - 1.333\ BZPSK - .807\ BZHAK = -1{,}116.55 + 207\ T + 1{,}817[1 + .3(0)]^T$$

Regional Equilibrium Conditions

$$-BZQSB + BZQDB + BZQTB = 0$$

$$-BZQSP + 1.0016\ BZQDP = 0$$

$$BZQSW - BZQDW + BZQTW = 0$$

$$-BZQSC + BZQDCH + BZQDCF + BZQTC = 0$$

$$-BZQSR + BZQDRH + BZQTR = 0$$

$$-BZQSK + BZQDKF + BZQTK = 0$$

Supply-Demand Price Equations

$$BZPSB - BZPDB = 0$$

$$BZPSW - .6\ BZPDW = 48.522$$

$$BZPSP - BZPDP = 0$$

$$BZPSC - BZPDC = -14.67$$

$$BZPSR - BZPDR = -114$$

$$BZPSK - BZPDK = -15.54$$

Demand-Trade Price Equations

$$BZPDB - BZPTB = 0$$

$$BZPDW - BZPTW = 25.17$$

$$BZPDC - BZPTC = -7.34$$

$$BZPDR - BZPTR = 93$$

$$BZPDK - BZPTK = 0$$

Demand Equations

$$VNQDWH + 3.333\ VNPDW - .4070\ VNPDR - 1.122\ VNPDC = 70.73 + 707[1 + .35(.02687) + .02948]^{T}$$

$$VNQDCH - 1.756\ VNPDW + 2.956\ VNPDC = 74.48 + 745[1 + .15(.02687) + .02948]^{T}$$

$$VNQDRH - .3583\ VNPDW + .0656\ VNPDR = -\ 11.4 + 114[1 + .15(.02687) + .02948]^{T}$$

$$VNQDCF + 1.429\ VNPDC = 90.03 + 300[1 + .4(.02687) + .02948]^{T}$$

Supply Equations

$$VNHAT - .9135\ VNPSC = 657.0 + 2.7\ T$$

$$VNHAC - 1.143\ VNPSC + .4365\ VNPSR - .834\ VNHAT = -\ 30.25 + 3\ T$$

$$VNHAR + 1.143\ VNPSC - .4365\ VNPSR - .166\ VNHAT = 30.25 - 3\ T$$

$$VNQSC - 1.314\ VNPSC - 1.149\ VNHAC = -\ 804.74 + 17\ T + 700[1 + 1.5(0)]^{T}$$

$$VNQSR - .1408\ VNPSR - 1.083\ VNHAR = -\ 150.69 + 4\ T + 131[1 + 1.375(0)]^{T}$$

Regional Equilibrium Conditions

$$VNQDWH + VNQTW = 0$$

$$-\ VNQSC + VNQDCH + VNQDCF + VNQTC = 0$$

$$-\ VNQSR + VNQDRH + VNQDR = 0$$

Supply-Demand Price Equations

$$VNPSC - .5\ VNPDC = 48.41$$

$$VNPSR - VNPDR = -\ 34.16$$

Demand-Trade Price Equations

$$VNPDW - VSPTW = 4.91$$

$$VNPDC - VNPTC = -\ 3.91$$

$$VNPDR - VNPTR = 51.69$$

Demand Equations

$$LAQDW + 13.43\ LAPDW - 1.587\ LAPDR - 9.943\ LAPDC = + .33 + 3{,}840[1 + .3(.01925) + .02760]^T$$

$$LAQDCH - 6.449\ LAPDW + 13.93\ LAPDC = 345.80 + 2{,}306[1 + .15(.01925) + .02760]^T$$

$$LAQDRH - 3.577\ LAPDW + 1.057\ LAPDR = + .003 + 1{,}279[1 + .35(.01925) + .02760]^T$$

$$LAQDCF + 11.08\ LAPDC = 641.86 + 1{,}604[1 + .2(.01925) + .02760]^T$$

$$LAQDKF + 1.070\ LAPDK - .21\ LAQDCF = 106.46$$

Supply Equations

$$LAHAT - 14.59\ LAPSC = 4{,}315.8 + 65\ T$$

$$LAHAW - 2.654\ LAPSW + .959\ LAPSC - .268\ LAHAT = - 218.92 - 11\ T$$

$$LAHAC + 2.654\ LAPSW - 1.954\ LAPSC + .839\ LAPSK - .524\ LAHAT = 222.69 - 18\ T$$

$$LAHAR + .663\ LAPSC - .5777\ LAPSR - .134\ LAHAT = - 58.495 + 30\ T$$

$$LAHAK + .332\ LAPSC - .839\ LAPSK - .074\ LAHAT = - 53.889 - 1\ T$$

$$LAQSW - 1.791\ LAPSW - 1.35\ LAHAW = - 2{,}145.77 + 28\ T + 1{,}950[1 + 1(0)]^T$$

$$LAQSC - 2.387\ LAPSC - 1.25\ LAHAC = - 3{,}707.82 + 67\ T + 3{,}531[1 + 1.2(0)]^T$$

$$LAQSR - 1.119\ LAPSR - 1.936\ LAHAR = - 1{,}612.04 + 9\ T + 1{,}402[1 + .7(0)]^T$$

$$LAQSK - 3.843\ LAPSK - .75\ LAHAK = 2{,}705.82 + 30\ T + 300[1 + .2(0)]^T$$

Regional Equilibrium Conditions

$$- LAQSW + LAQDW + LAQTW = 0$$

$$- LAQSC + LAQDCH + LAQDCF + LAQTC = 0$$

$$- LAQSR + LAQDRH + LAQTR = 0$$

$$- LAQSK + LAQDKF + LAQTK = 0$$

Supply-Demand Price Equations

$$LAPSW - .5\ LAPDW = 73.135$$

$$LAPSC - .5\ LAPDC = 45.005$$

$$LAPSR - .7\ LAPDR = 18.6$$

$$LAPSK - LAPDK = 0$$

Demand-Trade Price Equations

$$LAPDW - LAPTW = 1.18$$

$$LAPDC - LAPTC = - 2.36$$

$$LAPDR - LAPTR = 0$$

$$LAPDK - LAPTK = 0$$

Demand Equations

$$NHQDW + 22.64\ NHPDW - 2.187\ NHPDC - 1.305\ NHPDR = 1{,}861.56 + 9{,}306[1 + .25(.05864) + .03225]^{T}$$

$$NHQDCH - 5.318\ NHPDW + 6.423\ NHPDC - 1.277\ NHPDR = -\ 273.26 + 2{,}733[1 + .15(.05864) + .03225]^{T}$$

$$NHQDR - 2.351\ NHPDW - .651\ NHPDC + 1.870\ NHPDR = 103.14 + 1{,}334[1 + .3(.05864) + .03225]^{T}$$

$$NHQDCF + 2.933\ NHPDC = 249.60 + 832\ [1 + .3(.05864) + .03225]^{T}$$

$$NHQDKF - .30\ NHQDCF + .9307\ NFPDK = 187.19$$

Supply Equations

$$NHHAT - 19.32\ NHPSW = 10{,}032.32 + 100\ T$$

$$NHHAW - 9.089\ NHPSW + 3.125\ NHPSC + 2.499\ NHPSR - .706\ NHHAT = -\ 361.0 + 16\ T$$

$$NHHAC + 8.183\ NHPSW - 3.125\ NHPSC - .254\ NHHAT = 527.01 - 17\ T$$

$$NHHAR + .906\ NHPSW - 2.499\ NHPSR - .040\ NHHAT = -\ 165.98 + 1\ T$$

$$NHQSW - 3.636\ NHPSW - .80\ NHHAW = 175\ T - 6{,}997.24 + 6{,}664[1 + 1.2(0)]^{T}$$

$$NHQSC - 1.563\ NHPSC - .75\ NHHAC = 50\ T - 2{,}362.5 + 2{,}250[1 + .6(0)]^{T}$$

$$NHQSR - 1.374\ NHPSR - 1.937\ NHHAR = 15\ T - 1.053.6 + 916[1 + 1.5(0)]^{T}$$

Regional Equilibrium Conditions

$$-\ NHQSW + NHQDW + NHQTW = 0$$

$$-\ NHQSC + NHQDCH + NHQDCF + NHQTC = 0$$

$$-\ NHQSR + NHQDR + NHQTR = 0$$

$$NHQDKF + NHQTK = 0$$

Supply-Demand Price Equations

$$NHPSW - NHPDW = -\ 11.13$$

$$NHPSC - NHPDC = -\ 13.10$$

$$NHPSR = .5\ NHPDR = -\ 7$$

Demand-Trade Price Equations

$$NHPDW - NHPTW = 33.15$$

$$NHPDC - NHPTC = 20.82$$

$$NHPDR - NHPTR = 0$$

$$NHPDK - NHPTK = 0$$

Demand Equations

$$NLQDWH + 61.62\ NLPDW - 31.31\ NLPDC - 23.72\ NLPDR = -988.07 + 19{,}771[1 + .05(.03301) + .02349]^{T}$$

$$NLQDCH - 22.02\ NLPDW + 37.30\ NLPDC - 7.538\ NLPDR = .222 + 9{,}422[1 + .1(.03301) + .02349]^{T}$$

$$NLQDRH - 3{,}488\ NLPDW - 2{,}363\ NLPDC + 2.984\ NLPDR = -.048 + 1{,}492[1 + .2(.03301) + .02349]^{T}$$

$$NLQDCF + 10.99\ NLPDC = 694.02 + 4{,}628[1 + .1(.03301) + .02349]^{T}$$

Supply Equations

$$NLHAT - 15.34\ NLPSW = 22{,}766.5 + 115\ T$$

$$NLHAW - 25.26\ NLPSW + 11.11\ NLPSC - .549\ NLHAT = -1{,}257.53 + 81\ T$$

$$NLHAC + 25.12\ NLPSW - 11.11\ NLPSC - .428\ NLHAT = 1{,}237.79 - 86\ T$$

$$NLHAR + .14\ NLPSW - 1.282\ NLPTR - .023\ NLHAT = -148.2 + 5\ T$$

$$NLQSW - 17.68\ NLPSW - 1.05\ NLHAW = 405\ T - 15{,}194.09 + 13{,}815[1 + 875(0)]^{T}$$

$$NLQSC - 10.31\ NLPSC - 1.30\ NLHAC = 323\ T - 13{,}991.13 + 13{,}325[1 + .6(0)]^{T}$$

$$NLQSR - 2.885\ NLPTR - 3.375\ NLHAR = 6\ T - 2{,}267.93 + 1{,}890[1 + .6(0)]^{T}$$

Regional Equilibrium Conditions

$$-NLQSW + NLQDWH + NLQTW = 0$$

$$-NLQSC + NLQDCH + NLQDCF + NLQTC = 0$$

$$-NLQSR + NLQDRH + NLQTR = 0$$

Supply-Demand Price Equations

$$NLPSW - NLPDW = 13.96$$

$$NLPSC - NLPDC = 1.46$$

Demand-Trade Price Equations

$$NLPDW - NLPTW = 1.27$$

$$NLPDC - NLPTC = 2.60$$

$$NLPDR - NLPTR = -6.00$$

Demand Equations

$$EFQDWH + 1.992\ EFPDW - 1.638\ EFPDC - .3978\ EFPDR = 56.54 + 20\ T + 565[1 + .35(.01579) + .03030]^{T}$$

$$EFQDCH - 1.463\ EFPDW + 6.014\ EFPDC - .8765\ EFPDR = 124.49 + 6{,}225[1 + .1(.01579) + .03030]^{T}$$

$$EFQDRH - .2762\ EFPDW - .6812\ EFPDC + .8272\ EFPDR = 0 + 235[1 + .3(.01579) + .03030]^{T}$$

$$EFQDCF + 1.449\ EFPDC = -\ 147.0 + 250[1 + .2(.01579) + .03030]^{T}$$

Supply Equations

$$EFHAT - 19.04\ EFPSC = 5{,}034.6 + 36.5\ T$$

$$EFHAW - .3035\ EFPSW - .036\ EFHAT = -\ 19.73 + 1\ T$$

$$EFHAC - 17.58\ EFPSC - .924\ EFHAT = -\ 823.13 - .3\ T$$

$$EFHAR - .6702\ EFPSR - .040\ EFHAT = -\ 46.52 - .7\ T$$

$$EFQSW - .2795\ EFPSW - 1.84\ EFHAW = -\ 415.4 + 5.9\ T + 396[1 + .9(0)]^{T}$$

$$EFQSC - 13.60\ EFPSC - 1.16\ EFHAC = -\ 6{,}979.78 + 100\ T + 6{,}345[1 + .525(0)]^{T}$$

$$EFQSR - .4520\ EFPSR - .899\ EFHAR = -\ 246.06 + 1.8\ T + 214[1 + 1.6(0)]^{T}$$

Regional Equilibrium Conditions

$$-\ EFQSW + EFQDWH + EFQTW = 0$$

$$-\ EFQSC + EFQDCH + EFQDCF + EFQTC = 0$$

$$-\ EFQSR + EFQDRH + EFQTR = 0$$

Supply-Demand Price Equations

$$EFPSW - EFPDW = -\ 14.24$$

$$EFPSC - EFPDC = -\ 5.09$$

$$EFPSR - EFPDR = 0$$

Demand-Trade Price Equations

$$EFPDW - EFPTW = -\ 1.84$$

$$EFPDC - EFPTC = -\ 1.80$$

$$EFPDR - .5\ EFPTR = -\ 27.98$$

Demand Equations

$$CFC\emptyset G = 3{,}829[1 + .15(.0220) + .02759]^T$$

$$CFQDWH + CFQDCH - CFC\emptyset G = 0$$

$$CFQDCH - CFQSC = 0$$

$$CFQDRH + 5.70\ CFPDR + 712.625 + 3{,}563[1 + .1(.02220) + .02759]^T$$

Supply Equations

$$CFQSW = 634 + 9\ T$$

$$CFQSC = 2{,}925 + 40\ T$$

$$CFQSR - 8.435\ CFPSR = 2{,}294.42 + 75\ T$$

Regional Equilibrium Conditions

$$- CFQSW + CFQDWH + CFQTW = 0$$

$$- CFQSC + CFQDCH + CFQTC = 0$$

$$- CFQSR + CFQDRH + CFQTR = 0$$

Supply-Demand Price Equation

$$CFPSR - .5\ CFPDR = 5.5$$

Demand-Trade Price Equation

$$CFPDR - CFPTR = 3.0$$

Export Equation

$$CFQTK - 3.162\ CFPTK = 11.44.84 + 30\ T$$

Demand Equations

$$NDCOW + 112.57\ NDPDW - 35.53\ NDPDR - 34.44\ NDPDC = 3{,}374.7 + 22{,}500[1 + .7(.01364) + .0247]^T$$

$$NDQDW = .8\ NDCOW + .2\ NDQSW + .5\ NDCORH - .5\ NDQSR$$

$$NDQDCH = 30.65\ NDPDW + 25.79\ NDPDR - 131.26\ NDPDC + 3{,}674.7 + 24{,}501[1 + .2(.01364) + .0247]^T - 210\ T$$

$$NDCORH - 53.76\ NDPDW + 180.98\ NDPDR - 6.58\ NDPDC = 12{,}465.1 + 42{,}983[1 + .7(.01364) + .0247]^T$$

$$NDQDRH = .2\ NDCORH + .8\ NDQSR$$

$$NDQDCF = .15\ NDQSC - 6.196\ NDPDC - 3{,}253.1 + 1{,}012[1 + .4(.01364) + .0247]^T$$

$$NDQDKF = -\ 6.495\ NDPDK + 547.8 + 2{,}739[1 + .1(.01364) + .0247]^T$$

Supply Equations

$$NDHAT - 33.41\ NDPSW - 40.5\ NDPSR = 106{,}164.37 + 195\ T$$

$$NDHAW - 50.09\ NDPSW + 31.1\ NDPSC + 40.48\ NDPSR - .150\ NDHAT = 327.8 + 538\ T$$

$$NDHAC + 22.48\ NDPSW - 116.42\ NDPSC + 52.07\ NDPSR + 32.02\ NDPSK - .386\ NDHAT = 1{,}688.14 + 150\ T$$

$$NDHAR + 19.54\ NDPSW + 57.67\ NDPSC - 107.85\ NDPSR - .333\ NDHAT = 3{,}204.73 + 280\ T$$

$$NDHAK + 8.07\ NDPSW + 27.65\ NDPSC + 15.3\ NDPSR - 32.02\ NDPSK - .131\ NDHAT = 1{,}208.8 + 346\ T$$

$$NDQSW - 16.42\ NDPSW - 1.23\ NDHAW = -\ 22{,}489.9 + 625\ T + 20{,}825[1 + 1.2(0)]^T$$

$$NDQSC - 14.98\ NDPSC - .56\ NDHAC = -\ 23{,}365.06 + 630\ T + 24{,}386[1 + .55(0)]^T$$

$$NDQSR - 34.94\ NDPSR - 1.108\ NDHAR = -\ 44{,}668.85 + 600\ T + 41{,}755[1 + .95(0)]^T$$

$$NDQSK - 6.15\ NDPSK - .234\ NDHAK = -\ 3{,}981.9 + 19.5\ T + 3{,}458[1 + .25(0)]^T$$

Regional Equilibrium Conditions

$$-\ NDQSW + NDQDW + NDQTW = 0$$

$$-\ NDQSC + NDQDCH + NDQDCF + NDQTC = 0$$

$$-\ NDQSR + NDQDRH + NDQTR = 0$$

$$-\ NDQSK + NDQDKF + NDQTK = 0$$

Supply-Demand Price Equations

$$NDPSW - NDPDW = 21.45$$

$$NDPSC - NDPDC = 0$$

$$NDPSR - NDPDR = -\ 11.35$$

$$NDPSK - NDPDK = 0$$

Demand-Trade Price Equations

$$NDPDW - .7\ NDPTW = 28.171$$

$$NDPDC - .4\ NDPTC = 37.522$$

$$NDPDR - .4\ NDPTR = 30.82$$

$$NDPDK - NDPTK = 0$$

Demand Equations

ØSCØW + 32.65 ØSPDW - 17.06 ØSPDR - .9454 ØSPDC = + 1,222 52 + 8,735[1 + .7(.00409) + .03023]^{T}

ØSQDW - .8 ØSCØW - .2 ØSQSW - .5 ØSCØR + .5 ØSQSR = 0

ØSQDC - 1.297 ØSPDW - 1.445 ØSPDR + 2.002 ØSPDC = - 138.77 + 925[1 + .2(.00409) + .03023]^{T}

ØSCØR - 30.323 ØSPDW + 38.023 ØSPDR - 5.268 ØSPDC = 1,135.67 + 16,223[1 + .7(.00409) + .03023]^{T}

ØSQDR - .2 ØSCØR - .8 ØSQSR = 0

Supply Equations

ØSHAT - 4.880 ØSPSR - 11.24 ØSPSW = 19,969.92 + 226 T

ØSHAW - 6.538 ØSPSW + 1.288 ØSPSC + 3,843 ØSPSR - .291 ØSHAT = - 170.97 - 3 T

ØSHAC + 4.414 ØSPSW - 1.288 ØSPSC - .079 ØSHAT = 306.26 - 4 T

ØSHAR + 2.124 ØSPSW - 3.843 ØSPSR - .630 ØSHAT = - 135.29 + 7 T

ØSQSW - 3.661 ØSPSW - 1.12 ØSHAW = 260 T - 7,344.1 + 6,994[1 + .9(0)]^{T}

ØSQSC - .1948 ØSPSC - .53 ØSHAC = 30 T - 919.0 + 900[1 + .9(0)]^{T}

ØSQSR - 5.40 ØSPSR - 1.170 ØSHAR = 316 T - 16,309.72 + 15,834[1 + .75(0)]^{T}

Regional Equilibrium Equations

- ØSQSW + ØSQDW + ØSQTW = 0

- ØSQSC + ØSQDC + ØSQTC = 0

- ØSQSR + ØSQDR + ØSQTR = 0

Supply-Demand Price Equations

ØSPSW - ØSPDW = - 11.48

ØSPSC - ØSPDC = 0

ØSPSR - ØSPDR = - 40.00

Demand-Trade Price Equations

ØSPDW - .7 ØSPTW = 55.221

ØSPDC - .7 ØSPTC = 43.726

ØSPDR - .4 ØSPTR = 80.00

Demand Equations

$$THQDWH + .0464\ THPDW - .1614\ THPDR = -\ 10.35 + 69[1 + .2(.04392) + .03298]^T$$

$$THQDC + .3735\ THPDC - .4912\ THPDR = -\ 111.0 + 300[1 + .2(.04392) + .03298]^T$$

$$THQDR - 1.302\ THPDC + 4.281\ THPDR = 292.81 + 7{,}321[1 + .1(.04392) + .03298]^T$$

Supply Equations

$$THHAT - 19.05\ THPSR - 19.33\ THPTC = 4{,}952.4 + 100\ T$$

$$THHAC - 1.368\ THPSC - .1004\ THHAT = -\ 76.47 + 13\ T$$

$$THHAR - 4.284\ THPSR - .8996\ THHAT = -\ 342.77 - 13\ T$$

$$THQSC - 3.486\ THPSC - 2.549\ THHAC = -\ 2{,}145.0 + 42\ T + 1{,}950[1 + .35(0)]^T$$

$$THQSR - 11.12\ THPSR - 1.2975\ THHAR = -\ 9{,}782.66 + 120\ T + 8{,}893[1 + .45(0)]^T$$

Regional Equilibrium Conditions

$$THQDWH + THQTW = 0$$

$$-THQSC + THQDC + THQTC = 0$$

$$-THQSR + THQDR + THQTR = 0$$

Supply-Demand Price Equations

$$THPSR - THPDR = -\ 5.50$$

$$THPSC - THPDC = -\ .29$$

Demand-Trade Price Equations

$$THPDW - THPTW = 0$$

$$THPDC - THPTC = -2.88$$

$$THPDR - .8\ THPTR = -36.9$$

Demand Equations

$$\text{ØEQDWH} + .4138\ \text{ØEPTW} - .4322\ \text{ØEPDR} = -\ 14.55 + 291[1 + .2(.01182) + .02364]^{T}$$

$$\text{ØEQDCH} = 85[1 + .15(.01182) + .02364]^{T}$$

$$\text{ØEQDRH} - 1.617\ \text{ØEPTW} + 5.629\ \text{ØEPDR} = 454.81 + 11{,}371[1 + .1(.01182) + .02364]^{T}$$

$$\text{ØEQDCF} - 1.523\ \text{THPTC} = -\ 390.02 + 45\ T + 300[1 + .2(.01182) + .02364]^{T}$$

Supply Equations

$$\text{ØEHAR} - 22.24\ \text{ØEPSR} = 9{,}008.2 + 45\ T$$

$$\text{ØEQSC} - 1.015\ \text{THPTC} = -\ 60 + 55\ T + 300[1 + .45(0)]^{T}$$

$$\text{ØEQSR} - 25.87\ \text{ØEPSR} - 1.163\ \text{ØEHAR} = -\ 12{,}804.62 + 250\ T + 11{,}640[1 + .4(0)]^{T}$$

Regional Equilibrium Conditions

$$\text{ØEQDWH} + \text{ØEQTW} = 0$$

$$-\ \text{ØEQSC} + \text{ØEQDCH} + \text{ØEQDCF} + \text{ØEQTC} = 0$$

$$-\ \text{ØEQSR} + \text{ØEQDRH} + \text{ØEQTR} = 0$$

Supply-Demand Price Equations

$$\text{ØEPSR} - .5\ \text{ØEPDR} = -\ 5.50$$

Demand-Trade Price Equations

$$\text{ØEPDR} - \text{ØEPTR} = -\ 3.00$$

Demand Equations

$$DOCOWH + 3.546\ DOPDW - 3.298\ DOPDR - 3.498\ DOPDC = -\ 424.73 + 531[1 + .55(.025) + .02641]^{T} + 5\ T$$

$$DOQDWH - DOCOWH - .4\ DOCORH + .4\ DOQSR = 0$$

$$DOQDCH - .7996\ DOPDW - 4.463\ DOPDR + 11.833\ DOPDC = -\ 71.9 + 2{,}395[1 + .3(.025) + .02641]^{T} + 50\ T$$

$$DOCORH - 5.611\ DOPDW + 19.573\ DOPDR - 6.228\ DOPDC = 2{,}268.8 + 12{,}605[1 + .45(.025) + .02641]^{T}$$

$$DOQDRH - .6\ DOCORH - .4\ DOQSR = 0$$

$$DOQDK + .6757\ DOPDK = 37.6 + 188[1 + .3(.025) + .02641]^{T}$$

Supply Equations

$$DOHAT - 14.95\ DOPSR = 9{,}626.1 + 70\ T$$

$$DOHAC - 5.043\ DOPSC + 5.157\ DQPSK - .239\ DOHAT = -\ 106.2 - 20\ T$$

$$DOHAR - 10.13\ DOPSR + 3.187\ DOPSC - .678\ DOHAT = -\ 1{,}386.6 + 22\ T$$

$$DOHAK + 1{,}856\ DOPSC - 5.157\ DOPSK - .083\ DOHAT = -\ 193.2 - 2\ T$$

$$DOQSC - 1.778\ DOPSC - .95\ DOHAC = -\ 2{,}863.0 + 160\ T + 2{,}730[1 + .8(0)]^{T}$$

$$DOQSR - 7.377\ DOPSR - 1.456\ DOHAR = -\ 13{,}065.7 + 140\ T + 11{,}877[1 + .575(0)]^{T}$$

$$DOQSK - .1804\ DOPSK - .24\ DOHAK = -\ 238.04 + 9.4\ T + 502[1 + .25(0)]^{T}$$

Regional Equilibrium Conditions

$$DOQDWH + DOQTW = 0$$

$$-\ DOQSC + DOQDCH + DOQTC = 0$$

$$-\ DOQSR + DOQDRH + DOQTR = 0$$

$$-\ DOQSK + DOQDK + DOQTK = 0$$

Supply-Demand Price Equations

$$DOPSC - .7\ DOPDC = 34.286$$

$$DOPSR - DOPDR = 0$$

$$DOPSK - DOPDK = 0$$

Demand-Trade Price Equations

$$DOPDW - DOPTW = 0$$

$$DOPDC - DOPTC = 1.60$$

$$DOPDR - DOPTR = -\ 4.55$$

$$DOPDK - DOPTK = 0$$

Demand Equations

EHCOWH + 10.640 EHPDW - 1.8 EHPDC - 2.953 EHPDR = 190.25 + 3,175[1 + .1(.05607) + .01948]^{T}

EHQDWH - EHCØWH - .4 EHCØRH + .4 EHQSR = 0

EHQDCH - 1.978 EHPDW + 7.524 EHPDC - 1.647 EHPDR = - .148 + 1,770[1 + .05(.05607) + .01948]^{T}

EHCORH - 13.070 EHPDW - 5.5260 EHPDC + 10.880 EHPDR = 779.60 + 7,799[1 + .05(.05607 + .01948]^{T}

EHQDRH - .6 EHCØRH - .4 EHQSR = 0

EHQDCF + 13.39 EHPDC = 944.93 + 1,890[1 + .4(.05607) + .01948]^{T}

EHQDKF + 2.181 EHPDK = 236.66 + 789[1 + .3(.05607) + .01948]^{T}

Supply Equations

EHHAT - 4.022 EHPSR = 2,933.59 + 4 T

EHHAW - .1999 EHPSW + .1700 EHPSR - .042 EHHAT = - 6.77 + 2.9 T

EHHAR + .1999 EHPSW - 2.1745 EHPSR + 1.073 EHPSC + .1503 EHPSK - .564 EHHAT = - 134.9 - 4.6 T

EHHAC + 1.350 EHPSR - 1.534 EHPSC + .9077 EHPSK - .269 EHHAT = 47.67

EHHAK + .6545 EHPSR + .461 EHPSC - 1.058 EHPSK - .125 EHHAT = 94.0 + 1.7 T

EHQSW - .352 EHPSW - 2.20 EHHAW = - 409.24 + 2.8 T + 341[1 + 1.0(0)]^{T}

EHQSC - 2.127 EHPAC - 2.08 EHHAC = - 2,458.63 + 15.3 T + 2,049[1 + .75(0)]^{T}

EHQSR - 5.215 EHPSR - 3.07 EHHAR = - 7,299.71 + 11.3 T + 6,340[1 + .6(0)]^{T}

EHQSK - .0273 EHPSK - .31 EHHAK = - 145.25 + 1.4 T + 148[1 + .4(0)]^{T}

Regional Equilibrium Conditions

- EHQSW + EHQDWH + EHQTW = 0

- EHQSC + EHQDCH + EHQDCF + EHQTC = 0

- EHQSR + EHQDRH + EHQTR = 0

- EHQSK + EHQDK + EHQTK = 0

Supply-Demand Price Equations

EHPSW - .5 EHPDW = 149.125

EHPSC - .5 EHPDC = 157.395

EHPSR - .5 EHPDR = 74.85

EHPSK - EHPDK = 0

Demand-Trade Price Equations

EHPDW - EHPTW = 21.87

EHPDC - EHPTC = 2.37

EHPDR - .5 EHPTR = 138.0

EHPDK - EHPTK = 0

Demand Equations

$$ELQDWH + 5.111\ ELPTW - 1.172\ ELPTR - 3.025\ ELPDC = .02 + 930[1 + .35(.00271) + .03297]^{T}$$

$$ELQDCH - 1.696\ ELPTW - 2.723\ ELPTR + 8.783\ ELPDC = 107.94 + 2{,}160[1 + .2(.00271) + .03297]^{T}$$

$$ELQDRH - 3.975\ ELPTW + 9.360\ ELPTR - 4.118\ ELPDC = 607.54 + 5{,}063[1 + .2(.00271) + .03297]^{T}$$

$$ELQDCF + 1.220\ ELPDC = - 175 + 250[1 + .2(.00271) + .03297]^{T}$$

Supply Equations

$$ELHAT - 14.41\ ELPSR = 5{,}306.35 + 77\ T$$

$$ELHAC - 3.696\ ELPSC + 3.677\ ELPSR - .383\ ELHAT = - 1.08 + 28\ T$$

$$ELHAR + 3.696\ ELPSC - 3.677\ ELPSR - .617\ ELHAT = 1.08 - 28\ T$$

$$ELQSC - 1.570\ ELPSC - .85\ ELHAC = 70 - 2{,}133.03 + 2{,}031[1 + 1.125(0)]^{T}$$

$$ELQSR - 5.525\ ELPSR - 1.165\ ELHAR = 136\ T - 4{,}847.87 + 4{,}489[1 + 1.4(0)]^{T}$$

$$ELQSK - .4539\ ELPTK = 175 + 20\ T$$

Regional Equilbrium Conditions

$$ELQDWH + ELQTW = 0$$

$$- ELQSC + ELQDCH + ELQDCF + ELQTC = 0$$

$$- ELQSR + ELQDRH + ELQTR = 0$$

$$- ELQSK + ELQTK = 0$$

Supply-Demand Price Equations

$$ELPSC - ELPDC = 3.19$$

$$ELPSR - ELPTR = - 54.00$$

Demand-Trade Price Equations

$$ELPDC - ELPTC = - .98$$

$RWQTB = 254[1 + .3(.025) + .027]^T$

$RWQTP = 147[1 + .3(.025) + .027]^T$

$RWQTV = 117[1 + .015]^T$

RWQTLB + .1464 AZPTLB = 107.65

PRICE EQUATIONS LINKING REGIONS

Beef

CNPTB - .65 USPTB = -157.85

MCPTB - .65 USPTB = -92.85

BZPTB - .65 USPTB = -210.85

USPTB - AZPTB = 250.00

JPPTB - .8 AZPTB = 96.80

ARPTB - AZPTB = 61.00

C6PTB - .65 ARPTB = 80.00

Pork

USPTP - 1.6 C6PTP = 626.40

CNPTP - .6 USPTP = 246.40

MCPTP - .6 C6PTP = 17.60

JPPTP - 1.25 C6PTP = 453.50

Mutton

C6PTV - AZPTV = 287.70

JPPTV - AZPTV = 15.70

ARPTV - C6PTV = -245.47

Butter

CNPTLB - AZPTLB = 29.00

WEPTLB - AZPTLB = 587.00

JPPTLB - AZPTLB = -10.00

Cheese

USPTLC - CNPTLC = 161.00

WEPTLC - CNPTLC = 324.00

CNPTLC - AZPTLC = 617.00

JPPTLC - AZPTLC -5.00

Wheat

C6PTW - USPTW = 6.47

JPPTW - USPTW = 7.04

SFPTW - USPTW = 3.10

DOPTW - USPTW = 31.13

ELPTW - USPTW = 4.95

OEPTW - USPTW = 11.60

NDPTW - USPTW = 15.24

OSPTW - USPTW = 15.24

NHPTW - USPTW = 10.90

NLPTW - USPTW = 4.17

EFPTW - USPTW = 28.20

MCPTW - USPTW = 9.29

LAPTW - USPTW = 11.60

CNPTW - C6PTW = -1.87

ARPTW - C6PTW = -6.53

AZPTW - JPPTW = -10.61

EHPTW - AZPTW = 12.46

THPTW - AZPTW = 19.18

BZPTW - ARPTW = 14.09

Coarse grains

C6PTC - USPTC = 4.73

JPPTC - USPTC = 12.08

DOPTC - USPTC = 2.04

EHPTC - USPTC = 11.12

ELPTC - USPTC = 5.38

Continued

Coarse grains--Continued

NDPTC - USPTC = 12.44

OSPTC - USPTC = 12.44

NHPTC - USPTC = 7.20

NLPTC - USPTC = 3.47

MCPTC - USPTC = 19.51

VNPTC - USPTC = 9.83

LAPTC - USPTC = 3.21

CNPTC - C6PTC = -8.82

SFPTC - C6PTC = -3.61

EFPTC - C6PTC = -8.26

ARPTC - C6PTC = -.31

AZPTC - JPPTC = -28.80

THPTC - JPPTC = -10.05

BZPTC - LAPTC = -1.35

Rice

CNPTR - USPTR = 56.07

SFPTR - USPTR = 6.07

AZPTR - USPTR = -11.94

NHPTR - USPTR = 37.07

CFPTR - USPTR = -54.93

MCPTR - USPTR = 51.07

EHPTR - THPTR = 1.00

ELPTR - THPTR = -34.00

NDPTR - THPTR = 7.45

OSPTR - THPTR = -33.00

EFPTR - THPTR = 45.00

VNPTR - LAPTR = -120.00

Rice--Continued

LAPTR - USPTR = 65.07

USPTR - C6PTR = 22.43

OEPTR - C6PTR = -50.50

NLPTR - C6PTR = -23.50

BZPTR - C6PTR = -43.50

ARPTR - C6PTP = -55.57

C6PTR - THPTR = 1.50

WEPTR - THPTR = 9.00

DOPTR - THPTR = 12.55

Oilseeds

CNPTK - USPTK = 20.33

C6PTK - USPTK = 3.67

JPPTK - USPTK = 47.09

AZPTK - USPTK = 13.70

EHPTK - USPTK = 10.21

NHPTK - USPTK = 10.00

MCPTK - USPTK = 45.81

LAPTK - USPTK = -2.69

SFPTK - C6PTK = -11.97

ELPTK - C6PTK = -46.32

NDPTK - C6PTK = -17.63

CFPTK - C6PTK = -11.47

BZPTK - C6PTK = -18.27

ARPTK - C6PTK = -37.17

DOPTK - JPPTK = -89.74

Beef

$$\sum_{i=1}^{10} QSB - \sum_{i=1}^{9} QDB - \sum_{i=1}^{1} QDBT - \sum_{i=1}^{1} QDBP + \sum_{i=1}^{13} QTB = 0$$

Pork

$$\sum_{i=1}^{8} QSP - \sum_{i=1}^{8} QDP + \sum_{i=1}^{11} QTP = 0$$

Poultry

$$\sum_{i=1}^{2} QSZ - \sum_{i=1}^{2} QDZ + \sum_{i=1}^{2} QTZ = -44$$

Mutton

$$\sum_{i=1}^{5} QSV - \sum_{i=1}^{7} QDV + \sum_{i=1}^{7} QTV = 0$$

Butter

$$\sum_{i=1}^{6} QSLB - \sum_{i=1}^{6} QBLB + \sum_{i=1}^{7} QTLB = 0$$

Cheese

$$\sum_{i=1}^{7} QSLC - \sum_{i=1}^{7} QDLC + \sum_{i=1}^{7} QTLB = -19$$

Wheat

$$\sum_{i=1}^{19} QSW - \sum_{i=1}^{6} QDW - \sum_{i=1}^{18} QDWH - \sum_{i=1}^{7} QDWF + \sum_{i=1}^{27} QTW = 0$$

Coarse Grains

$$\sum_{i=1}^{24} QSC - \sum_{i=1}^{2} QDC - \sum_{i=1}^{22} QDCH - \sum_{i=1}^{20} QDCF + \sum_{i=1}^{27} QTC = 0$$

Rice

$$\sum_{i=1}^{21} QSR - \sum_{i=1}^{3} QDR - \sum_{i=1}^{21} QDRH + \sum_{i=1}^{26} QTR = -106$$

Oilmeal

$$\sum_{i=1}^{16} QSK - \sum_{i=1}^{3} QDK - \sum_{i=1}^{1} QDKH - \sum_{i=1}^{12} QDKF + \sum_{i=1}^{21} QTK = -1{,}184$$

Notes

General: The summation count is across regions, and the region count is indicated.
Beef: Includes Rest of world as a separate region to balance world trade.
Pork: Includes Rest of world as a separate region to balance world trade.
Poultry: Trade specified only between C3 and C6.
Mutton: Includes Rest of world as a separate region to balance world trade.
Butter: Includes Rest of world as a separate region to balance world trade.
Wheat: Feed use related directly to livestock production in only 7 regions.
Coarse grains: Feed use related directly to livestock production in only 10 regions.
Oilmeal: Feed use related directly to livestock production in only 9 regions.

Table 5 --Demand elasticities for meat

Item	Elasticity with respect to price of: Beef, Finished	Beef, Other	Pork	Poultry	Mutton	Income elasticity
United States:						
Beef, finished	-.7	.2	.1			.4
Beef, other	.4	-.8	.1	.1		.3
Pork	.4		-.8	.1		.1
Poultry	.3		.2	-1.0		.8
Mutton						
Canada:						
Beef		-.6	.3	.15		.7
Pork		.4	-.7	.15		.15
Poultry		.3	.2	-.8		.9
Mutton						
EC-6:						
Beef		-.7	.3	.1		.6
Pork		.5	-.8	.12		.5
Poultry		.38	.5	-1.07		1.0
Mutton		.15	.15		-.25	0
EC-3:						
Beef		-.6	.2	.08	-.2	.7
Pork		.18	-.8	.2	.17	.45
Poultry		.3	.3	-.6		1.0
Mutton		.1	.1	.1	-.1	0
Other Western Europe:						
Beef		-.6	.2	.1		.7
Pork		.2	-.7	.2		.6
Poultry		.1	.2	-.8		.9
Mutton		.15	.15		-.25	0
Japan:						
Beef		-1.2	.26	.35		1.2
Pork		.20	-.90	.11		.9
Poultry		.50	.17	-1.10		.6
Mutton		-.4	.2	.3	-.4	.5
Oceania:						
Beef		-.5			.2	0
Pork		.2	-.4			.1
Poultry						
Mutton		.4			-.8	0
Mexico & Central America:						
Beef		-.4	.1			.7
Pork		.1	-.3			.6
Poultry						
Mutton						
Argentina:						
Beef		-.4				.3
Pork		.2	-.4			0
Poultry						
Mutton		.2			-.4	0
Brazil:						
Beef		-.6	.3			.4
Pork		.2	-.6			.4
Poultry						
Mutton						

Table 6 --Demand elasticities for dairy products

Item	Elasticity with respect to price of			Income elasticity
	Milk	Butter	Cheese	
United States:				
Milk, fluid	-.2			-.1
Butter		-.7		
Cheese			-.5	.5
Canada:				
Milk, fluid	-.2			-.1
Butter		-.7		-.3
Cheese			-.5	.6
EC-6:				
Milk, fluid	-.25			.2
Butter		-.7		.2
Cheese			-.6	.5
EC-3:				
Milk, fluid	-.15			.2
Butter		-.5		.2
Cheese			-.6	.3
Other Western Europe:				
Milk, fluid	-.2			.3
Butter		-.5		.3
Cheese			-.6	.6
Japan:				
Milk, fluid	-.7			.95
Butter		-.7		1.0
Cheese			-1.69	1.25
Oceania:				
Milk, fluid	-.2			.1
Butter		-.4		-.1
Cheese			-.3	.5

Table 7 --Supply elasticities for meat

Item	Elasticity with respect to price of						
	Beef	Pork	Poultry	Mutton	Milk	Corn	Oilcake
United States:							
Beef	.3					-.2	-.05
Pork		.5				-.4	-.1
Poultry			.9			-.6	-.2
Mutton							
Canada:							
Beef	.4	-.1				-.2	-.05
Pork	-.2	.6	-.2			-.4	-.1
Poultry	-.1	-.2	.7			-.4	-.2
Mutton							
EC-6:							
Beef	.4	-.15			.15	-.2	-.1
Pork	-.3	.7	-.3			-.4	-.2
Poultry	-.2	-.2	.7			-.4	-.3
Mutton	-.15			.3	.15	-.15	
EC-3:							
Beef	.4	-.15			.15	-.2	-.1
Pork	-.15	.7	-.15			-.4	-.2
Poultry	-.2	-.2	.7			-.4	-.3
Mutton	-.15			.3	.15	-.15	
Other Western Europe:							
Beef	.4	-.15			.15	-.2	-.1
Pork	-.2	.5	-.2			-.3	-.15
Poultry	-.2	-.2	.6			-.3	-.25
Mutton	-.15			.3	.15	-.15	
Japan:							
Beef	.5	-.1	-.1	.2		-.3	
Pork		.7	-.2		-.15	-.4	-.2
Poultry		-.2	.7			-.4	-.3
Mutton							
Oceania:							
Beef	.4			-.1			
Pork	-.1	.3				-.2	
Poultry							
Mutton				.2			
Mexico & Central America							
Beef	.4	-.1					
Pork	-.1	.3				-.4	
Poultry							
Mutton							
Argentina:							
Beef	.5						
Pork	-.1	.3				-.2	
Poultry							
Mutton				.2			
Brazil:							
Beef	.5						
Pork	-.1	.4				-.3	-.15
Poultry							
Mutton							

Table 8--Supply elasticities for dairy products

Item	Elasticity with respect to price					Elasticity of joint output with beef
	Milk	Butter	Cheese	Corn	Oilcake	
United States:						
Milk, total	.4			-.3	-.2	
Cheese		-.6	.6			
Canada:						
Milk, total	.30			-.40	-.20	
Cheese		-.6	.6			
EC-6:						
Milk, total	.35			-.5	-.3	.5
Cheese			.4			
EC-3:						
Milk, total	.35			-.2	-.1	
Cheese			.4			
Other Western Europe:						
Milk, total	.3			-.35	-.1	
Cheese			.5			
Japan:						
Milk, total	.8			-.25	-.3	
Cheese						
Oceania:						
Milk, total	.4			-.2		
Cheese		-1.0	1.0			

Table 9--Factors affecting use of grain as livestock feed

Explanatory factors 1/	United States	Canada	EC-6	EC-3	Other Western Europe	Japan
	Kg. grain use per kg. product					
Input-output rates:						
Beef, finished 2/	5.74					
Beef, other 2/	2.02	4.60	1.30	2.27	2.46	2.33
Pork	6.43	6.50	3.60	4.22	4.60	5.09
Poultry	2.76	2.90	2.70	2.70	2.80	2.40
Lamb and Mutton	(1.86)		.25	.25		
Milk	.33	.33	.125	.21	.28	.20
Eggs	2.91	3.10	3.10	3.10		2.40
	Percentage change in grain use per unit percent price change					
Price elasticities:						
Beef, finished 2/	.22					
Beef, other 2/	.03	.25				
Pork	.25	.25	.50	.50	.40	.50
Corn	-.40	-.40	-.50	-.50	-.50	-.60
Oilseed cake	.10	.10	.10	.10	.10	.10

Explanatory factors 1/	Australia, New Zealand	South Africa	Eastern Europe	Soviet Union	China	Mexico Central America
	Kg. grain use per kg. product					
Input-output rates:						
Beef 2/	.30		2.80	3.00		.30
Pork	3.40		4.60	5.00	2.0	3.00
Poultry	3.00		3.00	3.50	1.0	
Milk	.12		.30	.30		
Eggs	3.00		(3.10)	3.50		
	Percentage change in grain use per unit percent price change					
Price elasticities:						
Beef 2/						.20
Pork	.30		.25			-.20
Corn	-.30	-.30	-.25			
	Percentage change in grain use per unit percent income change					
Income elasticity:						
Income per capita		.25				.10

Continued

Table 9--Factors affecting use of grain as livestock feed--Continued

Explanatory Factors 1/	Argentina	Brazil	Venezuela	Other South America	N. Africa-Middle East High	N. Africa-Middle East Low
	Kg. grain use per kg. product					
Input-Output Rates:						
Beef 2/	.50	1.50				
Pork	3.60	3.60				
	Percentage change in grain use per unit percent price change					
Price elasticities:						
Pork	.30	.30				
Corn	-.30	-.40	-.30	-.40	-.30	-.15
Oilseed cake		.10				
	Percentage change in grain use per unit percent income change					
Income elasticity:						
Income per capita	.20	.20	.20	.20	.30	.10

Explanatory Factors 1/	East Africa	Central Africa	India	Other South Asia	Thailand	Other Southeast Asia
	Percentage change in grain use per unit percent price change					
Price elasticities:						
Corn	-.30		-.40	-.20	-.1	-.3
	Percentage change in grain use per unit percent income change					
Income elasticity:						
Income per capita	.20	.15	.40	.20	.1	.2
	Grain use as a proportion of commodity supply					
Market shares:						
Commodity supply feed grain			.15			

Explanatory Factors 1/	Indonesia	East Asia High	East Asia Low	Rest of World
Price elasticities:				
Corn	-.30	-.50	-.30	
	Percentage change in grain use per unit percent income change			
Income elasticity:				
Income per capita	.30	.40	.20	

Note: Absence of terms indicates omission from the GOL model.

1/ Factor categories include (1) input-output rates, (2) price elasticities, (3) income elasticities, and (4) market shares. Suppression of any factor heading in the table signifies omission from the GOL model for the regions concerned.

2/ "Finished beef" is only identified in the U.S. "Other beef" in the U.S. is comparable to "beef" in all other regions.

Table 10--Factors affecting use of oilseed meal as livestock feed

Explanatory factors 1/	United States	Canada	EC-6	EC-3	Other Western Europe	Japan
	Kg. oilmeal use per kg. product					
Input-output rates:						
Beef, finished 2/	.25					
Beef, other 2/	.44	.10	.16	.12	.15	.50
Pork	.45	.35	.67	.55	.65	1.40
Poultry	.87	.60	1.18	1.05	1.16	1.20
Lamb and mutton	1.72					
Milk	.033	.03	.033	.025	.028	.80
Eggs	.47	.35	.71	.60		.70
	Percentage change in oilmeal use per unit percent price change					
Price elasticities:						
Beef, finished 2/	-.10					
Beef, other 2/	.23					
Pork	.27	.90	1.20	1.80	1.00	1.20
Corn	1.00	2.50	.90	1.00	1.20	1.50
Oilseed cake	-.53	-.98	-.25	-.37	-.20	-.30

Explanatory factors 1/	Australia New Zealand	South Africa	Eastern Europe	Soviet Union	China	Mexico Central America
	Kg. oilmeal use per kg. product					
Input-output rates:						
Pork			.40	.40	.40	
Poultry			.50	.50	.50	
Milk			.01	.01		
Eggs			.13	.40		
	Percentage change in oilmeal use per unit percent price change					
Price elasticities:						
Corn						.20
Oilseed cake	-.30					-.20
	Oilmeal use as a proportion of commodity demand					
Market shares:						
Commodity demand feed grain		.19				.32

Explanatory factors 1/	Argentina	Brazil	Venezuela	Other South America	N. Africa-Middle East High	N. Africa-Middle East Low
	Percentage change in oilmeal use per unit percent price change					
Price elasticities:						
Oilseed cake	-.50	-.40		-.30		
	Oilmeal use as a proportion of commodity supply					
Market shares:						
Commodity demand feed grain	.047	.064		.21	.30	

Continued

Table 10--Factors affecting use of oilseed meal as livestock feed--Continued

Explanatory Factors 1/	East Africa	Central Africa	India	Other South Asia	Thailand	Other Southeast Asia
	Percentage change in oilmeal use per unit percent price change					
Price elasticities:						
Oilseed cake			-.20			
	Percentage change in oilmeal use per unit percent income change					
Income elasticity:						
Income per capita			.10			

Explanatory Factors 1/	Indonesia	East Asia High	East Asia Low	Rest of World
	Percentage change in oilmeal use per unit percent price change			
Price elasticities:				
Oilseed cake	-.20	-.30		
	Percentage change in oilmeal use per unit percent income change			
Income elasticity:				
Income per capita	.30	.30		

Note: Absence of terms indicates omission from the GOL model.
1/ Factor categories include (1) input-output rates, (2) price elasticities, (3) income elasticities, and (4) market shares. Suppression of any factor heading in the table signifies omission from the GOL model for the regions concerned.
2/ "Finished beef" is only identified in the U.S. "Other beef" in the U.S. is comparable to "beef" in all other regions.

Table 11--Factors affecting nonfeed use of grains and oilseeds 1/

Item	Elasticity with respect to price of: Wheat	Rice	Coarse grains	Income elasticity	Annual demand trend 2/: Quantity	Percent of 1969-71 base
					1,000 metric tons	Percent
United States:						
Wheat	-.2					
Rice		-.2		.2		
Coarse grains			-.2			
Oilseeds						
Canada:						
Wheat	-.05		.03	-.25		
Rice		-.3		.15		
Coarse grains	.05		-.10	-.3		
Oilseeds						
EC-6:						
Wheat	-.2			-.1		
Rice		-.3		.2		
coarse grains			-.2	.1		
Oilseeds						
EC-3:						
Wheat	-.1			-.03		
Rice		-.3		.2		
Coarse grains			-.15	.05		
Oilseeds						
Other Western Europe:						
Wheat	-.25		.1	-.05		
Rice	.2	-.3		.2		
Coarse grains	.15		-.35	.10		
Oilseeds						
Japan:						
Wheat	-.45	.2		.2	50	.99
Rice	.10	-.15		-.20		
Coarse grains			-.25	.2		
Oilseeds 3/			-.1	.8		
Australia & New Zealand:						
Wheat	-.15			-.25		
Rice		-.1		.1		
Coarse grains			-.15	-.2		
Oilseeds						
South Africa:						
Wheat	-.15		.10	.1		
Rice	.15	(-.3)		.1		
Coarse grains	.03		-.08	-.05		
Oilseeds						
Mexico & Central America:						
Wheat	-.35	.10	.15	.35		
Rice	.2	-.4	.05	.35		
Coarse grains	.05		-.2	.1		
Oilseeds						
Argentina:						
Wheat	-.1		.05	-.1		
Rice	.05	-.2		.15		
Coarse grains	.05		-.1	-.25		
Oilseeds						

See footnotes at end of table.

Continued

Table 11 --Factors affecting nonfeed use of grains and oilseeds 1/ --Continued

Item	Elasticity with respect to price of			Income elasticity	Annual demand trend 2/	
	Wheat	Rice	Coarse grains		Quantity	Percent of 1969-71 base
					1,000 metric tons	Percent
Brazil:						
Wheat	-.25	.10	.10	.25		
Rice	.2	-.2	.02	.15		
Coarse grains	.05	.05	-.15	.1		
Oilseeds						
Venezuela:						
Wheat	-.3	.1	.1	.35		
Rice	.2	-.1		.15		
Coarse grains	.15		-.25	.15		
Oilseeds						
Other South America:						
Wheat	-.25	.1	.15	.3		
Rice	.2	-.2		.35		
Coarse grains	.2		-.35	.15		
Oilseeds						
North Africa/Middle East--High:						
Wheat	-.25	.03	.02	.25		
Rice	.18	-.3	.04	.3		
Coarse grains	.2	.1	-.2	.15		
Oilseeds						
North Africa/Middle East--Low:						
Wheat	-.35	.15	.10	.05		
Rice	.15	-.25	.10	.2		
Coarse grains	.15	.1	-.25	.1		
Oilseeds						
East Africa:						
Wheat	-.3	.05	.15	.35	20	3.54
Rice	.1	-.25	.15	.3		
Coarse grains	.02	.01	-.05	.1		
Oilseeds						
Central Africa:						
Wheat						
Rice		-.2		.1		
Coarse grains						
Oilseeds						
India:						
Wheat	-.4	.15	.1	.7		
Rice	.1	-.4	.01	.7		
Coarse grains	.1	.10	-.35	.2	-210	-.86
Oilseeds						
Other South Asia:						
Wheat	-.4	.25	.01	.4		
Rice	.2	-.30	.03	.4		
Coarse grains	.15	.2	-.20	.2		
Oilseeds						
Thailand:						
Wheat	-.05	.2		.2		
Rice		-.05	.01	.1		
Coarse grains		.2	-.1	.2		
Oilseeds						

See footnotes at end of table.

Continued

Table 11--Factors affecting nonfeed use of grains and oilseeds 1/--Continued

Item	Elasticity with respect to price of: Wheat	Rice	Coarse grains	Income elasticity	Annual demand trend 2/: Quantity	Percent of 1969-71 base
					1,000 metric tons	Percent
Other Southeast Asia:						
Wheat	-.1	.15		.2		
Rice	.01	-.05		.1		
Coarse grains				.15		
Oilseeds						
Indonesia:						
Wheat	-.6	1.0	.4	.55	5	.94
Rice	.04	-.25	.03	.45		
Coarse grains	.03	.3	-.3	.3	50	2.09
Oilseeds						
East Asia--High:						
Wheat	-.3	.2	.04	.10		
Rice	.15	-.3	.05	.05		
Coarse grains	.1	.2	-.3	.05		
Oilseeds						
East Asia--Low:						
Wheat	(-.35)	(.15)	.2	.35		
Rice	(.05)	(-.22)	.05	.2		
Coarse grains	(.05)	(.15)	-.25	.2		
Oilseeds						

1/ Including food use of soybeans in the case of Japan. The use of parentheses in the table indicates trade prices; the absence of parentheses indicates demand prices.
2/ Trend in demand independent of any price effect.
3/ The coefficient shown in the coarse grain column is an elasticity with respect to the price of soybeans.

Table 12--Factors affecting the supply of grains and oilseeds 1/

Item	Area elasticity with respect to price of				Yield elasticity with respect to price of			
	Wheat	Rice	Coarse grains	Oilseeds	Wheat	Rice	Coarse grains	Oilseeds
United States:								
Wheat	(2.5)		(-1.84)	(-.69)	(.05)			
Rice		(.8)				(.10)		
Coarse grains	(-.83)		(2.3)	(-1.00)			(.10)	
Oilseeds	(-.78)		(-3.60)	(3.25)				(.02)
Canada:								
Wheat	.5		-.40	-.15	.15			
Rice								
Coarse grains	-.55		.55	-.15			.15	
Oilseeds	-.16		-.24	1.0				.20
EC-6:								
Wheat	.7		-.70		.25			
Rice		.20				.20		
Coarse grains	-.61		.61				.30	
Oilseeds								
EC-3:								
Wheat	.65		-.55		.2			
Rice								
Coarse grains	-.161		.147				.2	
Oilseeds								.02
Other Western Europe:								
Wheat	.25		-.25		.25			
Rice		.15				.15		
Coarse grains	-.185		.185	.10			.30	
Oilseeds				.10				.10
Japan:								
Wheat					.30			
Rice		.012		-.02		.15		
Coarse grains							.25	
Oilseeds		-.2		.28				.15
Australia & New Zealand:								
Wheat	.4		-.35		.15			
Rice		.10				.1		
Coarse grains	-.75		.66				.15	
Oilseeds				.30				.15
South Africa:								
Wheat	.30				.25			
Rice								
Coarse grains			(.30)	(-.3)			(.30)	
Oilseeds								(.10)
Mexico & Central America:								
Wheat	.45		-.25	-.07	.20			
Rice		.15				.10		
Coarse grains	-.02		.04	-.02			.07	
Oilseeds	-.21		-.46	.50				.05
Argentina:								
Wheat	.4		-.31		.10			
Rice		.25				.30		
Coarse grains	-.21		.3	-.15			.15	
Oilseeds	-.15		-.30	.45				.10

See footnote at end of table.

Continued

Table 12--Factors affecting the supply of grains and oilseeds 1/ --Continued

Item	Area elasticity with respect to price of: Wheat	Rice	Coarse grains	Oilseeds	Yield elasticity with respect to price of: Wheat	Rice	Coarse grains	Oilseeds
Brazil:								
Wheat	.7		-.70		.05			
Rice		.2	-.10			.10		
Coarse grains	-.12		.3	-.20			.08	
Oilseeds			-1.10	1.6				.05
Venezuela:								
Wheat								
Rice		.50	-.756			.15		
Coarse grains		-.10	.15				.15	
Oilseeds								
Other South America:								
Wheat	.2		-.05		.10			
Rice		.15	.07			.15		
Coarse grains	-.10		.05	-.03			.05	
Oilseeds			-.08	.20				.10
North Africa/Middle East--High:								
Wheat	.1	-.03	-.03		.05			
Rice	-.20	.50				.15		
Coarse grains	-.25		.09				.05	
Oilseeds								
North Africa/Middle East--Low:								
Wheat	.15		-.06		.10			
Rice	-.02	(.30)				(.20)		
Coarse grains	-.20		.07				.05	
Oilseeds								
East Africa:								
Wheat	.10				.05			
Rice		.20				.15		
Coarse grains			.15				.10	
Oilseeds								
Central Africa								
Wheat								
Rice						.20		
Coarse grains								
Oilseeds								
India:								
Wheat	.30	-.20	-.12		.08			
Rice	-.05	.25	-.10			.07		
Coarse grains	-.05	-.10	.17	-.062			.04	
Oilseeds	-.055	-.09	-.12	.20				.15
Other South Asia:								
Wheat	.1	-.05	-.02		.05			
Rice	-.015	.025				.03		
Coarse grains	-.25		.07				.02	
Oilseeds								
Thailand:								
Wheat								
Rice		.05				.10		
Coarse grains			.1				.10	
Oilseeds								

See footnote at end of table.

Continued.

Table 12--Factors affecting the supply of grains and oilseeds 1/ --Continued

Item	Area elasticity with respect to price of				Yield elasticity with respect to price of			
	Wheat	Rice	Coarse grains	Oilseeds	Wheat	Rice	Coarse grains	Oilseeds
Other Southeast Asia:								
Wheat								
Rice		.10				.10		
Coarse grains							(.20)	
Oilseeds								
Indonesia:								
Wheat								
Rice		.2	-.03			.10		
Coarse grains			.14	-.10			.05	
Oilseeds			-.15	.30				.02
East Asia--High								
Wheat	.25	-.20			.20			
Rice	-.02	.19	-.10	-.01		.15		
Coarse grains		-.25	.3	-.10			.20	
Oilseeds		-.26	-.19	.25				.02
East Asia--Low								
Wheat								
Rice		.06	-.06			.08		
Coarse grains		-.10	.1				.05	
Oilseeds								(.03)

1/ The use of parentheses in the table indicates trade prices; the absence of parentheses indicates supply prices.

TOTAL GRAIN UTILIZATION

REGION	AREA	YIELD	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 HECTARES	METRIC TONS PER HECTARE	1,000 METRIC TONS	PERCENT	- - - - - - - - - - 1,000 METRIC TONS - - - - - -				
UNITED STATES	60671.0	3.4	208733.0	19.3	136772.0	32232.0	169004.0	0.0	39945.0
CANADA	17065.0	2.0	33400.0	3.1	15305.0	4645.0	19950.0	60.0	14991.0
EURO SIX	21404.0	3.3	71491.0	6.6	46625.0	32729.0	79354.0	8570.0	1226.0
EURO THREE	5755.0	3.8	21810.0	2.0	20286.0	11109.0	31395.0	9445.0	0.0
OTHER W EUROPE	14456.0	2.0	28405.0	2.6	20173.0	13292.0	33465.0	4962.0	0.0
SOUTH AFRICA	7264.0	1.4	10175.0	0.9	2274.0	4948.0	7222.0	76.0	2645.0
JAPAN	3458.0	3.7	12675.0	1.2	9248.0	18603.0	27851.0	14960.0	546.0
AUST-N ZEALAND	12047.0	1.2	15019.0	1.4	2810.0	3236.0	6046.0	0.0	10910.0
EAST EUROPE	29964.0	2.4	72059.0	6.7	18125.0	60598.0	78723.0	6067.0	0.0
SOVIET UNION	110285.0	1.5	164965.0	15.2	83000.0	78023.0	161023.0	858.0	4799.0
CHINA	114322.0	1.4	163940.0	15.2	7070.0	159831.0	166901.0	3915.0	877.0
INDONESIA	11028.0	1.3	14607.0	1.3	0.0	15531.0	15531.0	1268.0	200.0
EAST ASIA HIGH	3208.0	2.7	8730.0	0.8	1890.0	12744.0	14634.0	5969.0	0.0
EAST ASIA LOW	6243.0	1.0	6520.0	0.6	0.0	8153.0	8153.0	1766.0	0.0
THAILAND	7619.0	1.4	10843.0	1.0	0.0	7600.0	7600.0	70.0	3227.0
OTHER SE ASIA	10084.0	1.2	11940.0	1.1	0.0	11747.0	11747.0	255.0	486.0
INDIA	98160.0	0.9	86966.0	8.0	1012.0	89984.0	90996.0	3210.0	0.0
OTHER S. ASIA	21473.0	1.1	23728.0	2.2	0.0	25883.0	25883.0	2404.0	0.0
N.AF.-M.EST HIGH	11803.0	0.8	9830.0	0.9	832.0	13373.0	14205.0	3778.0	0.0
N.AF.-M.EST LOW	23965.0	1.2	29030.0	2.7	4628.0	30685.0	35313.0	5718.0	398.0
CENTRAL AFRICA	8616.0	0.7	6427.0	0.6	0.0	7392.0	7392.0	851.0	116.0
EAST AFRICA	5923.0	1.2	6955.0	0.6	28.0	7025.0	7053.0	299.0	0.0
MIDDLE AMERICA	12337.0	1.3	15749.0	1.5	3107.0	13790.0	16897.0	1043.0	0.0
VENEZUELA	730.0	1.1	831.0	0.1	300.0	1566.0	1866.0	968.0	17.0
BRAZIL	17121.0	1.2	21075.0	1.9	10876.0	11734.0	22610.0	1835.0	1003.0
ARGENTINA	11273.0	1.7	19222.0	1.8	5148.0	5674.0	10822.0	0.0	8177.0
OTHER S AMERICA	4994.0	1.4	6883.0	0.6	1604.0	7425.0	9029.0	2230.0	123.0
DEV-ED REGION	142120.0	2.8	401708.0	37.1	253493.0	120794.0	374287.0	38073.0	70263.0
CENTRAL PLAN RG	254571.0	1.6	400964.0	37.1	108195.0	298452.0	406647.0	10840.0	5676.0
LESS DEV-ED RG	254577.0	1.1	279336.0	25.8	29425.0	270306.0	299731.0	31664.0	13747.0
WORLD TOTAL	651268.0	1.7	1082008.0	100.0	391113.0	689552.0	1080665.0	80577.0	89686.0

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COARSE GRAINS UTILIZATION

REGION	AREA	YIELD	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 HECTARES	METRIC TONS PER HECTARE	1,000 METRIC TONS	PERCENT	- - - - - - - - -	- 1,000 METRIC TONS	- - -	- -	- -
UNITED STATES	41222.0	4.0	165830.0	29.4	130723.0	15064.0	145787.0	0.0	20345.0
CANADA	7865.0	2.2	17300.0	3.1	13085.0	2130.0	15215.0	0.0	3241.0
EURO SIX	11325.0	3.5	39295.0	7.0	38025.0	9825.0	47850.0	8570.0	0.0
EURO THREE	4540.0	3.7	16705.0	3.0	16761.0	4739.0	21500.0	4630.0	0.0
OTHER W EUROPE	8235.0	2.2	18075.0	3.2	18313.0	3777.0	22090.0	4120.0	0.0
SOUTH AFRICA	5314.0	1.6	8715.0	1.5	2274.0	3556.0	5830.0	0.0	2585.0
JAPAN	265.0	2.7	725.0	0.1	9248.0	1867.0	11115.0	10265.0	0.0
AUST-N ZEALAND	4160.0	1.3	5408.0	1.0	2000.0	985.0	2985.0	0.0	2480.0
EAST EUROPE	19180.0	2.4	45647.0	8.1	15592.0	31658.0	47250.0	1550.0	0.0
SOVIET UNION	44580.0	1.6	71330.0	12.7	47000.0	24870.0	71870.0	540.0	0.0
CHINA	55750.0	1.3	70700.0	12.5	7070.0	63630.0	70700.0	0.0	0.0
INDONESIA	2870.0	1.0	2730.0	0.5	0.0	2395.0	2395.0	0.0	200.0
EAST ASIA HIGH	985.0	2.1	2049.0	0.4	1890.0	1770.0	3660.0	1665.0	0.0
EAST ASIA LOW	2390.0	0.8	2031.0	0.4	0.0	2160.0	2160.0	245.0	0.0
THAILAND	765.0	2.5	1950.0	0.3	0.0	210.0	210.0	0.0	1655.0
OTHER SE ASIA	75.0	4.0	300.0	0.1	0.0	85.0	85.0	0.0	215.0
INDIA	43553.0	0.6	24386.0	4.3	1012.0	24501.0	25513.0	115.0	0.0
OTHER S. ASIA	1700.0	0.5	900.0	0.2	0.0	925.0	925.0	15.0	0.0
N.AF.-M.EST HIGH	3000.0	0.8	2250.0	0.4	832.0	2733.0	3565.0	1205.0	0.0
N.AF.-M.EST LOW	10250.0	1.3	13325.0	2.4	4628.0	9422.0	14050.0	340.0	0.0
CENTRAL AFRICA	4363.0	0.7	2925.0	0.5	0.0	2925.0	2925.0	0.0	116.0
EAST AFRICA	5470.0	1.2	6345.0	1.1	28.0	6225.0	6253.0	17.0	0.0
MIDDLE AMERICA	11050.0	1.2	12930.0	2.3	3012.0	10083.0	13095.0	100.0	0.0
VENEZUELA	609.0	1.1	700.0	0.1	300.0	745.0	1045.0	262.0	0.0
BRAZIL	10400.0	1.4	14560.0	2.6	10876.0	3249.0	14125.0	0.0	935.0
ARGENTINA	6784.0	1.9	13115.0	2.3	5148.0	1287.0	6435.0	0.0	6467.0
OTHER S AMERICA	2825.0	1.2	3531.0	0.6	1604.0	2306.0	3910.0	380.0	0.0
DEV-ED REGION	82926.0	3.3	272053.0	48.3	230429.0	41943.0	272372.0	27585.0	28651.0
CENTRAL PLAN RG	119510.0	1.6	187677.0	33.3	69662.0	120158.0	189820.0	2090.0	0.0
LESS DEV-ED RG	107089.0	1.0	104027.0	18.5	29330.0	71021.0	100351.0	4344.0	9588.0
WORLD TOTAL	309525.0	1.8	563757.0	100.0	329421.0	233122.0	562543.0	34019.0	38239.0

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TABLE 13--BASE 1970 QUANTITY DOCUMENTATION--CONTINUED

APRIL 1978

WHEAT UTILIZATION

REGION	AREA	YIELD	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 HECTARES	METRIC TONS PER HECTARE	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	1,000 METRIC TONS	- - - - - -		
UNITED STATES	18668.0	2.1	40025.0	12.6	6049.0	15854.0	21903.0	0.0	17881.0
CANADA	9200.0	1.8	16100.0	5.1	2220.0	2455.0	4675.0	0.0	11750.0
EURO SIX	9385.0	3.2	31535.0	9.9	8600.0	22300.0	30900.0	0.0	1170.0
EURO THREE	1215.0	4.2	5105.0	1.6	3525.0	6225.0	9750.0	4670.0	0.0
OTHER W EUROPE	6100.0	1.6	9880.0	3.1	1860.0	8940.0	10800.0	775.0	0.0
SOUTH AFRICA	1950.0	0.7	1460.0	0.5	0.0	1315.0	1315.0	0.0	60.0
JAPAN	225.0	2.4	550.0	0.2	0.0	5030.0	5030.0	4695.0	0.0
AUST-N ZEALAND	7850.0	1.2	9420.0	3.0	810.0	2190.0	3000.0	0.0	8300.0
EAST EUROPE	10590.0	2.5	26265.0	8.2	2533.0	28537.0	31070.0	4261.0	0.0
SOVIET UNION	65355.0	1.4	92804.0	29.1	36000.0	52004.0	88004.0	0.0	4799.0
CHINA	24400.0	1.0	23910.0	7.5	0.0	27748.0	27748.0	3915.0	0.0
INDONESIA	0.0	0.0	0.0	0.0	0.0	531.0	531.0	540.0	0.0
EAST ASIA HIGH	155.0	2.2	341.0	0.1	0.0	3175.0	3175.0	2845.0	0.0
EAST ASIA LOW	0.0	0.0	0.0	0.0	0.0	930.0	930.0	945.0	0.0
THAILAND	0.0	0.0	0.0	0.0	0.0	69.0	69.0	70.0	0.0
OTHER SE ASIA	0.0	0.0	0.0	0.0	0.0	291.0	291.0	255.0	0.0
INDIA	16930.0	1.2	20825.0	6.5	0.0	22500.0	22500.0	2600.0	0.0
OTHER S. ASIA	6245.0	1.1	6994.0	2.2	0.0	8735.0	8735.0	2000.0	0.0
N.AF.-M.EST HIGH	8330.0	0.8	6664.0	2.1	0.0	9306.0	9306.0	2155.0	0.0
N.AF.-M.EST LOW	13155.0	1.1	13815.0	4.3	0.0	19771.0	19771.0	5378.0	0.0
CENTRAL AFRICA	1022.0	0.6	634.0	0.2	0.0	904.0	904.0	156.0	0.0
EAST AFRICA	215.0	1.8	396.0	0.1	0.0	565.0	565.0	261.0	0.0
MIDDLE AMERICA	750.0	2.8	2100.0	0.7	95.0	2855.0	2950.0	810.0	0.0
VENEZUELA	0.0	0.0	0.0	0.0	0.0	707.0	707.0	706.0	0.0
BRAZIL	1840.0	1.0	1766.0	0.6	0.0	3780.0	3780.0	1835.0	0.0
ARGENTINA	4402.0	1.3	5875.0	1.8	0.0	4225.0	4225.0	0.0	1640.0
OTHER S AMERICA	1445.0	1.3	1950.0	0.6	0.0	3840.0	3840.0	1850.0	0.0
DEV-ED REGION	55093.0	2.1	114075.0	35.8	23064.0	64309.0	87373.0	10140.0	39161.0
CENTRAL PLAN RG	100345.0	1.4	142979.0	44.9	38533.0	108289.0	146822.0	8176.0	4799.0
LESS DEV-ED RG	54489.0	1.1	61360.0	19.3	95.0	82184.0	82279.0	22406.0	1640.0
WORLD TOTAL	209927.0	1.5	318414.0	100.0	61692.0	254782.0	316474.0	40722.0	45600.0

CONTINUED

RICE UTILIZATION

REGION	AREA	YIELD	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 HECTARES	METRIC TONS PER HECTARE	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	1,000 METRIC TONS	- - - - - -		
UNITED STATES	781.0	3.7	2878.0	1.4	0.0	1314.0	1314.0	0.0	1719.0
CANADA	0.0	0.0	0.0	0.0	0.0	60.0	60.0	60.0	0.0
EURO SIX	194.0	3.4	661.0	0.3	0.0	604.0	604.0	0.0	56.0
EURO THREE	0.0	0.0	0.0	0.0	0.0	145.0	145.0	145.0	0.0
OTHER W EUROPE	121.0	3.7	450.0	0.2	0.0	575.0	575.0	67.0	0.0
SOUTH AFRICA	0.0	0.0	0.0	0.0	0.0	77.0	77.0	76.0	0.0
JAPAN	2968.0	3.8	11400.0	5.7	0.0	11706.0	11706.0	0.0	546.0
AUST-N ZEALAND	37.0	5.2	191.0	0.1	0.0	61.0	61.0	0.0	130.0
EAST EUROPE	194.0	0.8	147.0	0.1	0.0	403.0	403.0	256.0	0.0
SOVIET UNION	350.0	2.4	831.0	0.4	0.0	1149.0	1149.0	318.0	0.0
CHINA	34172.0	2.0	69330.0	34.7	0.0	68453.0	68453.0	0.0	877.0
INDONESIA	8158.0	1.5	11877.0	5.9	0.0	12605.0	12605.0	728.0	0.0
EAST ASIA HIGH	2068.0	3.1	6340.0	3.2	0.0	7799.0	7799.0	1459.0	0.0
EAST ASIA LOW	3853.0	1.2	4489.0	2.2	0.0	5063.0	5063.0	576.0	0.0
THAILAND	6854.0	1.3	8893.0	4.5	0.0	7321.0	7321.0	0.0	1572.0
OTHER SE ASIA	10009.0	1.2	11640.0	5.8	0.0	11371.0	11371.0	0.0	271.0
INDIA	37677.0	1.1	41755.0	20.9	0.0	42983.0	42983.0	495.0	0.0
OTHER S. ASIA	13528.0	1.2	15834.0	7.9	0.0	16223.0	16223.0	389.0	0.0
N.AF.-M.EST HIGH	473.0	1.9	916.0	0.5	0.0	1334.0	1334.0	418.0	0.0
N.AF.-M.EST LOW	560.0	3.4	1890.0	0.9	0.0	1492.0	1492.0	0.0	398.0
CENTRAL AFRICA	3231.0	0.9	2868.0	1.4	0.0	3563.0	3563.0	695.0	0.0
EAST AFRICA	238.0	0.9	214.0	0.1	0.0	235.0	235.0	21.0	0.0
MIDDLE AMERICA	537.0	1.3	719.0	0.4	0.0	852.0	852.0	133.0	0.0
VENEZUELA	121.0	1.1	131.0	0.1	0.0	114.0	114.0	0.0	17.0
BRAZIL	4881.0	1.0	4749.0	2.4	0.0	4705.0	4705.0	0.0	68.0
ARGENTINA	87.0	2.7	232.0	0.1	0.0	162.0	162.0	0.0	70.0
OTHER S AMERICA	724.0	1.9	1402.0	0.7	0.0	1279.0	1279.0	0.0	123.0
DEV-ED REGION	4101.0	3.8	15580.0	7.8	0.0	14542.0	14542.0	348.0	2451.0
CENTRAL PLAN RG	34716.0	2.0	70308.0	35.2	0.0	70005.0	70005.0	574.0	877.0
LESS DEV-ED RG	92999.0	1.2	113949.0	57.0	0.0	117101.0	117101.0	4914.0	2519.0
WORLD TOTAL	131816.0	1.5	199837.0	100.0	0.0	201648.0	201648.0	5836.0	5847.0

CONTINUED

OILMEAL UTILIZATION

REGION	AREA	YIELD	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 HECTARES	METRIC TONS PER HECTARE	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	1,000 METRIC TONS	- - - -	- - - -	- - - -
UNITED STATES	16772.0	1.5	25384.0	45.5	14234.0	0.0	14234.0	0.0	11150.0
CANADA	2680.0	0.5	1305.0	2.3	870.0	0.0	870.0	0.0	435.0
EURO SIX	0.0	0.0	549.0	1.0	10546.0	0.0	10546.0	9997.0	0.0
EURO THREE	0.0	0.0	544.0	1.0	3028.0	0.0	3028.0	2484.0	0.0
OTHER W EUROPE	545.0	2.0	1070.0	1.9	2951.0	0.0	2951.0	1881.0	0.0
SOUTH AFRICA	0.0	0.0	684.0	1.2	425.0	0.0	425.0	0.0	259.0
JAPAN	0.0	0.0	978.0	1.8	3124.0	651.0	3775.0	2795.0	0.0
AUST-N ZEALAND	195.0	0.3	60.0	0.1	0.0	152.0	152.0	92.0	0.0
EAST EUROPE	0.0	0.0	1316.0	2.4	2482.0	0.0	2482.0	1166.0	0.0
SOVIET UNION	0.0	0.0	5602.0	10.0	5602.0	0.0	5602.0	0.0	0.0
CHINA	0.0	0.0	3892.0	7.0	3642.0	0.0	3642.0	0.0	250.0
INDONESIA	950.0	0.5	502.0	0.9	0.0	188.0	188.0	0.0	314.0
EAST ASIA HIGH	459.0	0.3	148.0	0.3	789.0	0.0	789.0	601.0	0.0
EAST ASIA LOW	0.0	0.0	842.0	1.5	486.0	0.0	486.0	0.0	356.0
INDIA	14800.0	0.2	3458.0	6.2	2739.0	0.0	2739.0	0.0	719.0
N.AF.-M.EST HIGH	0.0	0.0	0.0	0.0	336.0	0.0	336.0	336.0	0.0
CENTRAL AFRICA	0.0	0.0	2141.0	3.8	710.0	0.0	710.0	0.0	1431.0
MIDDLE AMERICA	550.0	1.4	791.0	1.4	920.0	0.0	920.0	129.0	0.0
BRAZIL	1271.0	1.4	1817.0	3.3	698.0	0.0	698.0	0.0	1119.0
ARGENTINA	2244.0	0.5	1036.0	1.9	0.0	243.0	243.0	0.0	793.0
OTHER S AMERICA	401.0	9.2	3674.0	6.6	341.0	0.0	341.0	0.0	3333.0
DEV-ED REGION	20192.0	1.5	30574.0	54.8	35178.0	803.0	35981.0	17249.0	11844.0
CENTRAL PLAN RG	0.0	0.0	10810.0	19.4	11726.0	0.0	11726.0	1166.0	250.0
LESS DEV-ED RG	20675.0	0.7	14409.0	25.8	7019.0	431.0	7450.0	1066.0	8065.0
WORLD TOTAL	40867.0	1.4	55793.0	100.0	53923.0	1234.0	55157.0	19481.0	20159.0

CONTINUED

TABLE 13--BASE 1970 QUANTITY DOCUMENTATION--CONTINUED

APRIL 1978

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - - - 1,000 METRIC TONS				
MILK PRODUCTS UTILIZATION							
UNITED STATES	53162.0	27.0	0.0	0.0	0.0	0.0	0.0
CANADA	8284.0	4.2	0.0	0.0	0.0	0.0	0.0
EURO SIX	74412.0	37.8	0.0	0.0	0.0	0.0	0.0
EURO THREE	20778.0	10.6	0.0	0.0	0.0	0.0	0.0
OTHER W EUROPE	21720.0	11.0	0.0	0.0	0.0	0.0	0.0
JAPAN	4597.0	2.4	0.0	0.0	0.0	0.0	0.0
AUST-N ZEALAND	13741.0	7.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	196794.0	100.0	0.0	0.0	0.0	0.0	0.0
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORLD TOTAL	196794.0	100.0	0.0	0.0	0.0	0.0	0.0
FLUID MILK UTILIZATION							
UNITED STATES	0.0	0.0	0.0	33566.0	33566.0	0.0	0.0
CANADA	0.0	0.0	0.0	3711.0	3711.0	0.0	0.0
EURO SIX	0.0	0.0	0.0	31526.0	31526.0	0.0	0.0
EURO THREE	0.0	0.0	0.0	12443.0	12443.0	0.0	0.0
OTHER W EUROPE	0.0	0.0	0.0	12971.0	12971.0	0.0	0.0
JAPAN	0.0	0.0	0.0	3458.0	3458.0	0.0	0.0
AUST-N ZEALAND	0.0	0.0	0.0	3215.0	3215.0	0.0	0.0
DEV-ED REGION	0.0	0.0	0.0	100890.0	100890.0	0.0	0.0
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORLD TOTAL	0.0	0.0	0.0	100890.0	100890.0	0.0	0.0

CONTINUED

TABLE 13--BASE 1970 QUANTITY DOCUMENTATION--CONTINUED

APRIL 1978

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	- 1,000 METRIC TONS -	- - - - - -		
BUTTER UTILIZATION							
UNITED STATES	516.0	17.3	0.0	500.0	500.0	0.0	19.5
CANADA	148.0	5.0	0.0	148.0	148.0	0.0	0.0
EURO SIX	1294.0	43.4	0.0	1197.0	1197.0	0.0	97.0
EURO THREE	274.0	9.2	0.0	563.0	563.0	289.0	0.0
OTHER W EUROPE	256.0	8.6	0.0	244.0	244.0	0.0	12.0
JAPAN	45.1	1.5	0.0	45.5	45.5	0.4	0.0
AUST-N ZEALAND	446.0	15.0	0.0	174.0	174.0	0.0	272.0
REST OF WORLD	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	2979.1	100.0	0.0	2871.5	2871.5	289.4	400.5
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORLD TOTAL	2979.1	100.0	0.0	2871.5	2871.5	289.4	400.5
CHEESE UTILIZATION							
UNITED STATES	993.0	25.8	0.0	1063.0	1063.0	55.0	0.0
CANADA	101.0	2.6	0.0	111.0	111.0	10.0	0.0
EURO SIX	1859.0	48.2	0.0	1832.0	1832.0	0.0	27.0
EURO THREE	281.0	7.3	0.0	357.0	357.0	76.0	0.0
OTHER W EUROPE	433.0	11.2	0.0	370.0	370.0	0.0	63.0
JAPAN	9.8	0.3	0.0	42.9	42.9	33.1	0.0
AUST-N ZEALAND	178.0	4.6	0.0	60.0	60.0	0.0	118.0
DEV-ED REGION	3854.8	100.0	0.0	3835.9	3835.9	174.1	208.0
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORLD TOTAL	3854.8	100.0	0.0	3835.9	3835.9	174.1	208.0

CONTINUED

TOTAL MEAT UTILIZATION

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - - - 1,000 METRIC TONS				- - - - - -
UNITED STATES	21199.0	29.4	0.0	21904.0	21904.0	904.0	64.0
CANADA	1911.0	2.6	0.0	1928.0	1928.0	44.0	13.0
EURO SIX	11592.0	16.1	0.0	11973.0	11973.0	448.0	66.0
EURO THREE	4125.0	5.7	0.0	4627.0	4627.0	543.0	41.0
OTHER W EUROPE	3360.0	4.7	0.0	3631.0	3631.0	267.0	8.0
JAPAN	1362.0	1.9	0.0	1614.0	1614.0	253.0	0.0
AUST-N ZEALAND	3068.0	4.3	0.0	1616.0	1616.0	0.0	1449.0
EAST EUROPE	5067.0	7.0	0.0	4925.0	4925.0	0.0	142.0
SOVIET UNION	5107.0	7.1	0.0	5058.0	5058.0	0.0	49.0
CHINA	8863.0	12.3	0.0	8720.0	8720.0	0.0	43.0
MIDDLE AMERICA	1181.0	1.6	0.0	1030.0	1030.0	0.0	151.0
BRAZIL	2443.0	3.4	0.0	2315.0	2315.0	0.0	128.0
ARGENTINA	2907.0	4.0	0.0	2217.0	2217.0	0.0	687.0
REST OF WORLD	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	46617.0	64.6	0.0	47293.0	47293.0	2459.0	1641.0
CENTRAL PLAN RG	19037.0	26.4	0.0	18703.0	18703.0	0.0	234.0
LESS DEV-ED RG	6531.0	9.0	0.0	5562.0	5562.0	0.0	966.0
WORLD TOTAL	72185.0	100.0	0.0	71558.0	71558.0	2459.0	2841.0

CONTINUED

BEEF AND VEAL UTILIZATION

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	- 1,000 METRIC TONS	- - -	- - -	- - -
UNITED STATES	10063.0	31.9	0.0	10793.0	10793.0	741.0	0.0
CANADA	881.0	2.8	0.0	912.0	912.0	44.0	0.0
EURO SIX	4416.0	14.0	0.0	4828.0	4828.0	412.0	0.0
EURO THREE	1334.0	4.2	0.0	1522.0	1522.0	188.0	0.0
OTHER W EUROPE	1060.0	3.4	0.0	1250.0	1250.0	178.0	0.0
JAPAN	251.0	0.8	0.0	293.0	293.0	42.0	0.0
AUST-N ZEALAND	1385.0	4.4	0.0	654.0	654.0	0.0	729.0
EAST EUROPE	1852.0	5.9	0.0	1761.0	1761.0	0.0	91.0
SOVIET UNION	5107.0	16.2	0.0	5058.0	5058.0	0.0	49.0
MIDDLE AMERICA	843.0	2.7	0.0	692.0	692.0	0.0	151.0
BRAZIL	1832.0	5.8	0.0	1705.0	1705.0	0.0	127.0
ARGENTINA	2503.0	7.9	0.0	1865.0	1865.0	0.0	635.0
REST OF WORLD	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	19390.0	61.5	0.0	20252.0	20252.0	1605.0	729.0
CENTRAL PLAN RG	6959.0	22.1	0.0	6819.0	6819.0	0.0	140.0
LESS DEV-ED RG	5178.0	16.4	0.0	4262.0	4262.0	0.0	913.0
WORLD TOTAL	31527.0	100.0	0.0	31333.0	31333.0	1605.0	1782.0

CONTINUED

PORK UTILIZATION

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - -	- 1,000 METRIC TONS	- - - - - -		
UNITED STATES	6227.0	21.2	0.0	6325.0	6325.0	109.0	0.0
CANADA	601.0	2.1	0.0	588.0	588.0	0.0	12.0
EURO SIX	5061.0	17.3	0.0	4997.0	4997.0	0.0	64.0
EURO THREE	1838.0	6.3	0.0	1852.0	1852.0	14.0	0.0
OTHER W EUROPE	1493.0	5.1	0.0	1485.0	1485.0	0.0	8.0
JAPAN	635.0	2.2	0.0	667.0	667.0	33.0	0.0
AUST-N ZEALAND	212.0	0.7	0.0	207.0	207.0	0.0	4.0
EAST EUROPE	3215.0	11.0	0.0	3164.0	3164.0	0.0	51.0
CHINA	8863.0	30.2	0.0	8720.0	8720.0	0.0	43.0
MIDDLE AMERICA	338.0	1.2	0.0	338.0	338.0	0.0	0.0
BRAZIL	611.0	2.1	0.0	610.0	610.0	0.0	1.0
ARGENTINA	221.0	0.8	0.0	215.0	215.0	0.0	6.0
REST OF WORLD	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	16067.0	54.8	0.0	16121.0	16121.0	156.0	88.0
CENTRAL PLAN RG	12078.0	41.2	0.0	11884.0	11884.0	0.0	94.0
LESS DEV-ED RG	1170.0	4.0	0.0	1163.0	1163.0	0.0	7.0
WORLD TOTAL	29315.0	100.0	0.0	29168.0	29168.0	156.0	189.0

CONTINUED

POULTRY UTILIZATION

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - -	- - - - -	- - 1,000 METRIC TONS	- - - - -	- - - - -
UNITED STATES	4659.0	52.6	0.0	4483.0	4483.0	0.0	64.0
CANADA	429.0	4.8	0.0	428.0	428.0	0.0	1.0
EURO SIX	1920.0	21.7	0.0	1917.0	1917.0	0.0	2.0
EURO THREE	686.0	7.7	0.0	645.0	645.0	0.0	41.0
OTHER W EUROPE	534.0	6.0	0.0	576.0	576.0	42.0	0.0
JAPAN	475.0	5.4	0.0	489.0	489.0	14.0	0.0
AUST-N ZEALAND	153.0	1.7	0.0	151.0	151.0	0.0	2.0
DEV-ED REGION	8856.0	100.0	0.0	8689.0	8689.0	56.0	110.0
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORLD TOTAL	8856.0	100.0	0.0	8689.0	8689.0	56.0	110.0

CONTINUED

LAMB AND MUTTON UTILIZATION

REGION	PRODUCTION	PERCENT OF WORLD SUPPLY	FEED USAGE	FOOD & OTHER USAGE	TOTAL USAGE	IMPORTS	EXPORTS
	1,000 METRIC TONS	PERCENT	- - - - - - - - - - - - 1,000 METRIC TONS - - - - -				
UNITED STATES	250.0	10.1	0.0	303.0	303.0	54.0	0.0
EURO SIX	195.0	7.8	0.0	231.0	231.0	36.0	0.0
EURO THREE	267.0	10.7	0.0	608.0	608.0	341.0	0.0
OTHER W EUROPE	273.0	11.0	0.0	320.0	320.0	47.0	0.0
JAPAN	1.0	0.0	0.0	165.0	165.0	164.0	0.0
AUST-N ZEALAND	1318.0	53.0	0.0	604.0	604.0	0.0	714.0
ARGENTINA	183.0	7.4	0.0	137.0	137.0	0.0	46.0
REST OF WORLD	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEV-ED REGION	2304.0	92.6	0.0	2231.0	2231.0	642.0	714.0
CENTRAL PLAN RG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LESS DEV-ED RG	183.0	7.4	0.0	137.0	137.0	0.0	46.0
WORLD TOTAL	2487.0	100.0	0.0	2368.0	2368.0	642.0	760.0

NOTE: TOTAL GRAIN IS A SUMMATION OF GRAIN CATEGORIES INCLUDED BY REGION IN THE GOL MODEL, NAMELY, COARSE GRAINS, WHEAT, AND RICE, WHERE EXPLICITLY MODELED. TOTAL MEAT IS A SUMMATION OF MEAT CATEGORIES INCLUDED BY REGION IN THE GOL MODEL, NAMELY, BEEF AND VEAL, PORK, POULTRY, LAMB AND MUTTON, AND OTHER MEAT, WHERE EXPLICITLY MODELED.

SOURCE: FOR GRAINS AND OILMEAL, FOREIGN AGRICULTURAL SERVICE AND ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE, USDA. FOR DAIRY AND MEAT, FOREIGN AGRICULTURAL SERVICE AND ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE, USDA; ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT; AND FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS.

Table 14--Base 1970 price documentation

Price variables by region and commodity in the 1970 base. Prices are local currency units per metric ton of commodity and are for 1970 or a span of years centered on 1970. They are deflated by a local consumers price index (1970 = 1.0) and, where expressed in another currency equivalent, are converted by 1970 average foreign exchange rates. Footnotes are at the end of the table.

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
United States						
Beef	PDB	2198.00	US$	a	Beef, Choice, ave.	LMSTAT
	PSB	672.00	US$	a	Slaughter steers, Choice, Omaha	LMSTAT
	PTB	1289.00	US$	a	Cow beef, imported, 90% lean	NAPROV
Pork	PDP	1640.00	US$	a	Pork, U.S. ave. retail	LMSTAT
	PSP	470.00	US$	a	Slaughter hogs: Packer & shipper, barrows & gilts, Omaha	LMSTAT
	PTP	1564.00	US$	a	Hams, shoulders, canned, import unit value, ave. U.S.	SRS
Poultry	PDZ	952.00	US$	a	Retail of composite of broilers and turkeys	PESTAT
	PSZ	633.00	US$	a	Composite of broilers (Grade A) & turkeys (Ready to cook)	PESTAT
Butter	PDLB	1518.00	US$	a	Ave. wholesale, 92 score, Grade A, Chicago	DAIRYG
	PSLB	103.40	US$	a	Weighted ave. price for mfg, grade milk	DAIRYG
Milk	PDLM	133.75	US$	a	Ave. price for milk eligible for fluid use (Grade A)	DAIRYG
	PSL	126.18	US$	a	Weighted ave. price for Mfg. grade and Grade A milk eligible for fluid use	DAIRYG
Cheese	PDLC	1206.00	US$			
	PSLC	103.40	US$			
	PTLC	1392.00	US$			

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
United States (Continued)						
Wheat	PDW	57.00	US$	a	Kansas City No. 2 Hard Winter	GMNEWS
	PTW	58.73	US$	a	Gulf ports, No. 2 Hard Red Winter	WHSIT
Coarse grain	PDC	52.76	US$	a	Corn, No. 2 yellow, Chicago	GMNEWS
	PTC	57.08	US$	a	Corn, No. 2 Yellow Gulf ports	FESIT
Rice	PDR	515.00	US$	a	Long grain, retail, U.S. ave. price in leading cities	RISIT
	PTR	176.93	US$	a	Milled rice, U.S. NATO 2, fob mills, ave. of Southern head rice at milling centers	RISIT
Oilmeal	PDK	85.15	US$	a	Soybean meal, fob Decatur, 44% protein	FOSIT
	PTK	98.30	US$	a	Soybean meal, estimated fob export price for soybean meal + fob margin	FOSIT
	PTS	114.9	US$	a	Soybeans #2, fob Gulf	
Canada						
Beef	PDB	680.00	CAN	a	Beef cattle, good steers	CNSTAT
	PSB	680.00	CAN	a	Idem.	CNSTAT
	PTB	680.00	CAN	a	Idem.	CNSTAT
Pork	PDP	692.00	CAN	a	Hogs, wt. ave. dressed	CNSTAT
	PSP	692.00	CAN	a	Idem.	CNSTAT
	PTP	692.00	CAN	a	Idem.	CNSTAT
Poultry	PDZ	442.00	CAN	a	Broilers, producers livewt.	FAOPROD
	PSZ	442.00	CAN	a	Idem.	FAOPROD
Butter	PDLB	1444.00	CAN	a	Bulk delivered, dairy to Wholesale, Montreal	DAPROD
	PSLB	103.40	CAN	a		
	PTLB	727.00	CAN	a	Import unit value	FAOTRADE

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Canada (Continued)						
Milk	PDLM	142.27	CAN	a	Milk for liquid consump.	CNAGPOL
	PSL	120.81	CAN	a	Wt. ave. returns to producers for liquid and mfg. milk	CNAGPOL
Cheese	PDLC	1144.00	CAN	a	White cheddar, fob factory, Quebec	DAPROD
	PSLC	1144.00	CAN	a	Idem.	DAPROD
	PTLC	1231.00	CAN	a	Import unit value	FAOTRADE
Wheat	PDW	63.33	CAN	a	Board price, domestic use & export, Grade 1 - 2	CNGTQ
	PSW	49.72	US$	a	Wt. ave. producer price all grades	CNSTAT
	PTW	63.33	CAN	a	Same as CNPDW	CNGTQ
Coarse grain	PDC	52.99	CAN	a	Board price for barley, export & domestic use	CNGTQ
	PSC	46.35	US$	a	Board price for barley	CNGTQ
	PTC	52.99	US$	a	Same as CNPDC	CNGTQ
Rice	PDR	233.00	CAN	a	Milled rice	WRICE
	PTR	233.00	CAN	a	Idem.	WRICE
Oilseeds	PDK	118.63	CAN	a	Wholesale, Unit value Oilmeal	FAO
	PSK	101.30	CAN	a	Soybeans	NIRAP
	PTK	118.63	CAN	a	Same as CNPDK	FAO
European Community--EC-6						
Beef	PDB	1253.00	UA	a	Beef, carcass wt., 6 markets, W. Germany	AGWIRT
	PSB	778.00	UA	a	Cologne bulls, livewt. Class A--Excludes value added tax	GRSTAT
	PTB	795.00	UA	a	Demand price less variable levy (249) plus margin (209)	

Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
EC-6 (Continued)						
Pork	PDP	883.00	UA	a	Pork sides, carcass wt. purchase price of slaughter halves	AGWIRT
	PSP	754.00	UA	a	Cologne fed pigs, 100-119 kg livewt. Class C excl. value added tax	GRSTAT
	PTP	586.00	UA	a	Demand price minus variable levy (297 = ave. of loin (339) and shoulder (255))	
Poultry	PDZ	699.00	UA	a	Slaughter chickens, wholesale, Hamburg; up to 1972 fresh, delivered at retail store	FAOMB
	PSZ	490.00	UA	a	Chickens for roasting, livewt., Belgium-Deynze market	FRSTAT OECDAG
Mutton	PDV	972.00	UA	a	Fat sheep 18 mo. old livewt., Netherlands	CIJFERS
	PSV	972.00	UA	a	Idem.	CIJFERS
	PTV	698.00	UA	a	Demand price less marketing margin	
Butter	PDLB	1746.00	UA	a	EC Intervention Price	FACTS
Cheese	PDLC	1448.00	UA	a	Wholesale, Emmenthaler, Paris	DAPROD
Milk	PDLM	103.00	UA	a	EC Target Price for 3.7% butterfat milk	FACTS
	PSL	103.00	UA	a	Idem.	FACTS
Wheat	PDW	100.32	UA	a	Wheat, wholesale, Duisberg	MARCHES
	PSW	97.02	UA	a	Ble tendre, wholesale, France	FRSTAT
	PTW	65.20	UA	a	Import price cif Rotterdam for Hardwinter No. 2 13% protein	BOURSE
Coarse grain	PDC	91.90	UA	a	Barley, producers price Germany	ECE

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price: Variable code	Price: Units	Price: Currency	Price: Notes	Description, series title or identification	Source or reference
EC-6 (Continued)						
Coarse grain (Continued)	PSC	75.48	UA	a	Barley, purchases by agricultural co-ops, France	EUROSTAT
	PTC	61.81	UA	a	Corn, cif Rotterdam	OECDTR
Rice	PDR	334.00	UA	a	PTR (154.50) plus levy	
	PSR	179.84	UA	a	Milled, Common Originario type, Milan	WRICE
	PTR	154.50	UA	a	Import price for Thai long grain, milled, Germany	STATBUND, PRAUSS
Oilmeal	PDK	101.97	UA	a	Same as C6PTK	
	PTK	101.97	UA	a	US Bulk 44% protein cif European ports	
European Community--EC-3						
Beef	PDB	843.00	UA	a	Same as C3PSB	RMEATR
	PSB	843.00	UA	a	Bullock & Heifer sides Wholesale, Liverpool (about like US Good)	RMEATR
Pork	PDP	836.00	UA	a	Imported Danish bacon London (Smithfield)	FAOMB
	PSP	836.00	UA	a	Idem.	FAOMB
Poultry	PDZ	560.00	UA	a	Broilers, Good Quality wholesale slaughter, 4-market ave., England	FAOMB, FAOPROD
	PSZ	560.00	UA	a	Idem.	FAOMB, FAOPROD
Mutton	PDV	698.00	UA	a	Same as C3PSV	FAOMB, FAOPROD
	PSV	698.00	UA	a	New Zealand frozen carcasses, London (Smithfield)	FAOMB, FAOPROD
Butter	PDLB	869.00	UA	a	UK home produced, London Provincial Exchange	DAPROD
Cheese	PDLC	804.00	UA	a	Cheddar, white, English Factory Cheese	DAPROD

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Variable code	Units	Currency	Notes	Description, series title or identification	Source or reference
European Community--EC-3 (Continued)						
Milk	PDLM	98.00	UA	a	Ave. return to Dairy Board, all milk, England	FACTS
	PSL	95.00	UA	a	UK producer price, natural fat content	MARCHES
Wheat	PDW	72.47	UA	a	Wheat import prices, UK No. 2 Hard/Dark Hard Winter, 13.5% protein	IWS
	PSW	75.83	UA	a	UK guaranteed price	GUARD
Coarse grain	PDC	61.22	UA	a	UK market price for barley	GUARD
	PSC	68.93	UA	a	UK barley price	GUARD
Rice	PDR	166.00	UA	a	Import unit value	FAO
Oilmeal	PDK	106.97	UA	a	Soybean meal import price, cif European ports, US Bulk 44% protein	
	PSK	106.97	UA	a	C6PTK plus 5.00	
Other Western Europe						
Beef	PDB	1253.00	UA	a	Same as C6PDB	
	PSB	778.00	UA	a	Same as C6PSB	
Pork	PDP	883.00	UA	a	Same as C6PDP	
	PSP	754.00	UA	a	Same as C6PSP	
Poultry	PDZ	699.00	UA	a	Same as C6PDZ	
	PSZ	490.00	UA	a	Same as C6PSZ	
Mutton	PDV	972.00	UA	a	Same as C6PDV	
	PSV	972.00	UA	a	Same as C6PSV	
Butter	PDLB	1785.00	DE	b	Ex-dairy price, Finland	ECE, REVAG
	PTLB	1785.00	DE	b	Idem.	ECE, REVAG

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Other Western Europe (Continued)						
Cheese	PDLC	1496.00	DE	b	Pasteurized cow milk, wholesale, Bern, Switz.	ECE, REVAG
	PSLC	1496.00	DE	b	Idem.	ECE, REVAG
	PTLC	1555.00	DE	a	Unit value, Switz.	FAOTRADE
Milk	PDLM	212.00	DE	a	Pasteurized cow milk, wholesale, Bern, Switz.	FAS
	PSL	119.44	DE	a	Producer price, Wt. Ave.	FAO
Wheat	PDW	104.16	DE	a	Wt. ave. wholesale price OWE countries, by ERS	ECE, ERS
	PSW	97.73	DE	a	Wt. ave producer price OWE countries, by ERS	ECE, ERS
Coarse grain	PDC	79.00	DE	a	Barley and corn, wt. ave. wholesale, OWE countries calculated by ERS	ECE, ERS
	PSC	91.57	DE	a	Barley & corn, wt. ave. producer price, OWE countries, by ERS	ECE, ERS
Rice	PDR	162.00	DE	a	Same as WEPTR	
	PSR	103.00	DE	a	Wt. ave. producer price, OWE countries, report. by ECE, calc. by ERS	ECE, ERS
	PTR	162.00	DE	a	Wt. ave. import unit value reptd. by FAO, calc. by ERS	FAO, ERS
Oilmeal	PDK	106.97	DE	a	C6PDK plus 5.00	
	PSK	106.97	DE	a	C6PTK plus 5.00	
Japan						
Beef	PDB	1390.00	YTH	a	Retail, Medium grade, Tokyo	JPRICE
	PSB	427.00	YTH	a	Steers, producer live-weight	JPAGST
	PTB	928.00	US$	a	Import unit value	JPTRADE

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Japan (Continued)						
Pork	PDP	938.00	YTH	a	Retail, Medium grade	JPRICE
	PSP	267.00	YTH	a	Producer price, livewt.	JPAGST
	PTP	1186.00	US$	a	Import unit value	JPTRADE
Poultry	PDZ	760.00	YTH	a	Retail, Medium grade	JPRICE
	PSZ	192.00	YTH	a	Broilers, producer price	JPAGST
Mutton	PDV	152.43	YTH	a	Import unit value	JPTRADE
	PTV	426.00	US$	a	Import unit value	JPTRADE
Butter	PDLB	658.00	YTH	a	Wholesale price	JPINAN
	PTLB	688.00	US$	a	Import unit value	JPTRADE
Cheese	PDLC	610.00	YTH	a	Wholesale price	JPINAN
	PTLC	609.00	US$	a	Import unit value	JPTRADE
Milk	PDLM	131.61	YTH	a	Retail in 180 cc bottles, Tokyo	JPRICE
	PSL	48.30	YTH	a	Ave. farm gate price for all milk	JPAGST
Wheat	PDW	36.58	YTH	a	Wheat for food only wholesale, Japan	JPAGST
	PSW	58.60	YTH	a	Wheat producer price	JPAGST
	PTW	65.77	US$	a	Ave. cif prices, No. 2 Western White	IWS
Coarse grain	PDC	25.13	YTH	a	Coarse grain for feed only, wholesale	STAJAP
	PSC	66.03	YTH	a	Barley producer price	JPAGST
	PTC	69.16	US$	a		JPAGST
Rice	PDR	137.62	YTH	a	Milled rice, wholesale ave. grades 1 to 4	
	PSR	154.31	YTH	a	Milled rice, farm, ave. grades 1 to 4	
Soybeans	PDS	41.59	YTH	a	Ave. unit value	FAOTRADE
	PSS	41.59	YTH	a	Idem.	

Continued

Table 14--Base price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Japan (Continued)						
Oilmeal	PDK	51.99	YTH	a	Av. price paid by feed manufacturers	
	PSK	51.99	YTH	a	Idem.	
	PTK	145.39	US$	a	Export price	JPTRADE
Australia-New Zealand						
Beef	PDB	597.00	AD	a	Ox or heifer 650-700 export quality Sydney (Homebush)	AZAGEC
	PSB	597.00	AD	a	Idem.	AZAGEC
	PTB	1039.00	US$	a	Export unit value to US (USPTB minus margin 249)	AZAGEC
Pork	PDP	552.00	AD	a	Hogs 140-150 lb. Sydney (Homebush)	AZAGEC
	PSP	552.00	AD	a	Idem.	AZAGEC
Mutton	PDV	368.00	AD	a	Lamb 29-36 lb. 1st & 2nd export quality, dressed wt. basis	AZAGEC
	PSV	368.00	AD	a	Idem.	AZAGEC
	PTV	410.30	US$	a		
Butter	PDLB	1070.00	AD	a	Choicest Bulk, wholesale Australia	
	PSLB	41.25	AD			
	PTLB	698.00	US$	a	Export unit value, New Zealand	
Cheese	PDLC	661.00	AD	a	Choicest Cheddar cheese wholesale, Australia	
	PSLC	458.00	AD	a	Purchase price	NZDB
	PTLC	614.00	US$	a	Export unit value	
Milk	PDLM	97.59	AD	a	Fluid milk, unit wholesale value	
	PSL	41.24	AD	a	Producers price of milk equivalent at dairy	

Continued

Table 14--Base price documentation--Continued

Region and commodity	Price: Variable code	Price: Units	Price: Currency	Price: Notes	Description, series title or identification	Source or reference
Australia-New Zealand (Continued)						
Wheat	PDW	56.24	AD	a	Wheat Board selling price	IWS
	PSW	54.53	AD	a	Supply price	IWS
	PTW	55.16	US$	a	Export price, Oceania	IWS
Coarse grain	PDC	33.55	AD	a	Barley, Australian Wheat Board	AZWB
	PSC	33.55	AD	a	Idem.	AZWB
	PTC	40.36	US$	a	Barley	AZWB
Rice	PDR	148.00	AD	a		WRICE
	PSR	51.00	AD	a		WRICE
	PTR	164.99	US$	a		WRICE
Oilmeal	PDK	131.10	AD	a	Soybean meal	
	PSK	131.10	AD	a	Idem.	
	PTK	112.00	US$			
Argentina						
Beef	PDB	2347.00	NP	a	Steers (novillos), livewt. Buenos Aires (Liniers)	CARNES
	PSB	1071.00	NP	a	Idem.	CARNES
	PTB	1100.00	US$	a	Dollar equiv of PDB	CARNES
Pork	PDP	1369.00	NP	a	Hogs, Avellaneda	CARNES
	PSP	1369.00	NP	a	Idem.	CARNES
Poultry	PDZ	1246.00	NP	a	Broilers, producer price	CARNES, ERS
	PSZ	1246.00	NP	a	Idem.	
Mutton	PDV	1697.00	NP	a	Wholesale price, estimated by ERS	CARNES, ERS
	PSV	1697.00	NP	a	Idem.	
	PTV	452.53	US$			

Continued

Table 14--Base price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Argentina (Continued)						
Wheat	PDW	178.20	NP	a	Miller, on wagon price Buenos Aires	BOLSA
	PSW	178.20	NP	a	Producer price same as ARPDW	BOLSA
	PTW	58.67	US$	a	No. 1 Hard, fob Buenos Aires	IWS
Coarse grain	PDC	229.00	NP	a	Corn, wholesale, on wagon, interior points	BOLSA
	PSC	229.00	NP	a	Producer, same as ARPDC	BOLSA
	PTC	61.50	US$	a	Argentine corn, import price, cif North Sea ports	IWS
Rice	PDR	371.00	NP	a	Same as ARPTR	
	PSR	249.00	NP	a	Farm price, ave. for all qualities	FAOPROD
	PTR	98.93	US$	a	Export unit value (converted)	GRANOS
Oilmeal	PDK	243.00	NP	a	Prices and margins. Ave. meal prices, wholesale, mostly sunflower and linseed meal	ERS
	PSK	243.00	NP	a	Idem.	
	PTK	64.80	US$	a	Idem.	
Brazil						
Beef	PDB	627.00	DE	a	Same as BZPTB, carcass wt.	
	PSB	627.00	DE	a	Same as BZPTB	
	PTB	627.00	DE	a	BZPTB = .65USPTB - 210.85	
Pork	PDP	660.00	DE	a	Same as BZPSP, carcass wt.	
	PSP	660.00	DE	a	BZPSP = 1.0526 BZPSB	
Wheat	PDW	97.63	DE	a	Wheat, wholesale unit value	BRPROGN
	PSW	107.28	DE	a	Wheat, farm unit value	BRPROGN
	PTW	72.76	DE	a	Import unit value	BRPROGN

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Brazil (Continued)						
Coarse grain	PDC	51.60	DE	a	Corn, wholesale unit value	BRPROGN
	PSC	36.93	DE	a	Corn, farm unit value	BRPROGN
	PTC	58.94	DE	a	Import unit value	BRPROGN
Rice	PDR	204.00	DE	a	Longgrain, retail	WRICE
	PSR	90.00	DE	a	Producer	WRICE
	PTR	111.00	DE	a	Export unit value	FAO
Oilmeal	PDK	83.70	DE	a	Same as BZPTK	
	PSK	68.16	DE	a	Producer price received by farmers	VARGAS, PREAG
	PTK	83.70	DE	a	Export price as unit value	FAOPROD
Middle America						
Beef	PDB	745.00	DE	a	Beef, carcass wt., wholesale	FAS
	PSB	745.00	DE	a	Idem.	FAS
	PTB	745.00	DE	a	Idem.	FAS
Pork	PDP	956.00	DE	a	Pork, carcass wt. wholesale	FAS
	PSP	956.00	DE	a	Idem.	FAS
	PTP	956.00	DE	a	Idem.	FAS
Wheat	PDW	117.80	DE	a	Support price, Mexico	MEXBANK
	PSW	73.11	DE	a	Producer support price, Mexico	MEXBANK
	PTW	68.02	DE	a	Import price, Mexico	MEXSTAT
Coarse grain	PCD	87.78	DE	a	Corn, wholesale price, Mexico	MEXBANK
	PSC	64.50	DE	a	Corn, supply price	MEXBANK
	PTC	76.59	DE	a	Corn, import price	MEXBANK

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Middle America (Continued)						
Rice	PDR	228.00	DE	a	Same as MCPTR	
	PSR	300.00	DE	a	Wholesale price	WRICE
	PTR	228.00	DE	a	Import unit value	FAO
Oilmeal	PDK	144.11	DE	a	Wholesale price, soybeans amd meal	ERS
	PSK	144.11	DE	a	Idem.	ERS
	PTK	144.11	DE	a	Idem.	ERS
Other South America						
Wheat	PDW	71.51	DE	a	Farm price, Chile	FAOMB
	PSW	108.89	DE	a	Wholesale price, Chile	FAOMB
	PTW	70.33	DE	a	Import unit value, Chile	FAOMB
Coarse grain	PDC	57.93	DE	a	Corn, wholesale, Chile	FAOMB
	PSC	73.97	DE	a	Corn, producer, Chile	FAOMB
	PTC	60.29	DE	a	Corn, import price Chile	FAOMB
Rice	PDR	242.00	DE	a	Retail, Colombia	WRICE
	PSR	188.00	DE	a	Farm price, Peru	FAOPROD
	PTR	242.00	DE	a	Import unit value	FAO
Oilmeal	PDK	95.61	DE	a	Same as LAPTK	
	PSK	95.61	DE	a	Same as LAPTK	
	PTK	95.61	DE	a	Export price for soybeans and meal	ERS
India						
Wheat	PDW	79.95	DE	a	Whole price, India	INDSTAT
	PSW	101.40	DE	a	Producer price, India	INDSTAT
	PTW	73.97	DE	a	Import unit value	INDSTAT
Coarse grain	PDC	65.33	DE	a	Barley, wholesale	INDSTAT
	PSC	65.33	DE	a	Idem.	INDSTAT
	PTC	69.52	DE	a	Sorghum, import unit value	INDSTAT

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
India						
Rice	PDR	95.00	DE	a	Retail, Good quality	WRICE
	PSR	83.65	DE	a	Farm, Good quality	WRICE
	PTR	160.45	DE	a	Import unit value	FAO
Oilmeal	PDK	84.34	DE	a	Same as NDPTK	
	PSK	84.34	DE	a	Same as NDPTK	
	PTK	84.34	DE	a	Peanut meal, export unit value	ERS
Other South Asia						
Wheat	PDW	107.00	DE	a	Wholesale, Pakistan	PAKSTAT
	PSW	95.52	DE	a	Producer, Pakistan	PAKSTAT
	PTW	73.97	DE	a	Import price, India	PAKSTAT
Coarse grain	PDC	92.39	DE	a	Same as OSPSC	
	PSC	92.39	DE	a	Producer price, barley, Pakistan	PAKSTAT
	PTC	69.52	DE	a	Coarse grain ave. import price, Pakistan	PAKSTAT
Rice	PDR	128.00	DE	a	Retail, Bangladesh	BNGSTAT
	PSR	88.00	DE	a	Farm price, Pakistan	PAKSTAT
	PTR	120.00	DE	a	Import unit value	FAO
Indonesia						
Wheat	PDW	89.86	DE	a	Same as DOPTW	
	PTW	89.86	DE	a	Import unit value	FAO
Coarse grain	PDC	60.72	DE	a	Corn, wholesale	FAO
	PSC	76.79	DE	a	Corn, producer	FAO
	PTC	59.12	DE	a	Corn, export price	FAO
Rice	PDR	161.00	DE	a	Same as DOPSR	
	PSR	161.00	DE	a	Farm price, Indonesia	WRICE
	PTR	165.55	DE	a	Import price, Indonesia	WRICE
Oilmeal	PDK	55.65	DE	a	Same as DOPTK	
	PSK	55.65	DE	a	Same as DOPTK	
	PTK	55.65	DE	a	Coconut meal, Indonesia-Phillipines	ERS

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price				Description, series title or identification	Source or reference
	Variable code	Units	Currency	Notes		
Thailand						
Wheat	PDW	74.34	DE	a	Same as THPTW	
	PTW	74.34	DE	a	Import unit value	THAIMB
Coarse grain	PDC	56.23	DE	a	Corn, wholesale, Bangkok	THAIMB
	PSC	55.94	DE	a	Corn, producer price, ave.	THAIMB
	PTC	59.11	DE	a	Export unit value, corn	FAO
Rice	PDR	85.50	DE	a	Milled, wholesale, 5% broken	THAIBD
	PSR	80.00	DE	a	Milled, ave. wholesale for No. 1	THAIBD
	PTR	153.00	DE	a	Milled, 5% broken, white Govt.St. fob Bangkok	RISIT
East Asia-High Income						
Wheat	PDW	89.49	DE	a	Wholesale price, Korea	KORAG
	PSW	193.87	DE	a	Producer price, Korea	KORAG
	PTW	67.62	DE	a	Import unit value, Regional	FAO
Coarse grain	PDC	70.57	DE	a	Barley, wholesale, Korea	FAOMB
	PSC	192.68	DE	a	Barley, producer price	FAO
	PTC	68.20	DE	a	Corn import price	FAO
Rice	PDR	215.00	DE	a	High Quality, retail	WRICE
	PSR	182.35	DE	a	High Quality, farm	WRICE
	PTR	154.00	DE	a	Import unit value	FAO
Oilmeal	PDK	108.51	DE	a	Same as EHPTK	
	PSK	108.51	DE	a	Same as EHPTK	
	PTK	108.51	DE	a	Soybean meal, import unit value	ERS

Continued

Table 14--Base 1970 price documentation--Continued

Region and commodity	Price: Variable code	Units	Currency	Notes	Description, series title or identification	Source or reference
North Africa Mideast-High						
Wheat	PDW	102.78	DE	a	Wt. ave. import unit value	FAS
	PSW	91.65	DE	a	Wt. ave. import unit value	FAS
	PTW	69.63	DE	a	Wt. ave. import unit value	FAS
Coarse grain	PDC	85.10	DE	a	Corn, import value wt.	FAS
	PSC	72.00	DE	a	Corn, wt. import value	FAS
	PTC	64.28	DE	a	Corn, wt. import value	FAS
Rice	PDR	214.00	DE	a	Same as NHPTR	
	PSR	100.00	DE	a	Farm price, Iran	IRANAG
	PTR	214.00	DE	a	Import unit value	FAO
Oilmeal	PDK	108.30	DE	a	Same as NHPTK	
	PTK	108.30	DE	a	Soybean meal, import unit value	ERS

Notes:

The labor of documenting and sourcing which went into setting up this table is largely the work of Jan Feldstein Lipson.

Price variable code. See pages 11-14 for interpretation of the symbols. Since the region is named above in this table, its 2-character symbol is suppressed here.

Currency. US$ is U.S. dollars; CAN is Canadian dollars; UA is the EC unit of account; DE is dollar equivalent; AD is Australian dollars; YTH is thousands of Japanese yen; NP is Argentine new pesos.

Price notes. This column specifies timing of the price variables, with the following symbols: a is a 3-year average 1969-1971; b is a 2-year average 1970-1971; c is the year 1970.

Source or reference. Abbreviations are listed in the appendix.

APPENDIX

ABBREVIATIONS OF THE NAMES OF ORGANIZATIONS REPORTING DATA USED IN THE WORLD GOL MODEL AND THEIR PUBLICATIONS

AGWIRT	Agrarwirtschaft. Alfred Strothe Verlag. Hannover. Germany.
AMS	Agricultural Marketing Service. USDA.
AZAGEC	Statistical Handbook of the Meat Industry. Bureau of Agr. Econ. Canberra. Australia.
AZMB	Meat Producer and Exporter. Australian Meat Board. Melbourne. Australia.
AZWB	Australian Wheat Board. Melbourne. Australia.
BNGSTAT	Statistical Digest of Bangladesh. Dacca. Bangladesh.
BOERSE	Hamburg Boerse. Monthly. Hamburg. Germany.
BOLSA	Bolsa de Cereales. Annual. Buenos Aires. Argentina.
BRPROGEN	Prognostico. Federal Ministry of Agriculture. Brasilia. Brazil.
CARNES	Sintesis Estadistica. Junta Nacional de Carnes. Buenos Aires. Argentina.
CIJFERS	Landbouwcijfers. Landbouw-Economish Instituut. The Hague. Netherlands
CNAGPOL	Agricultural Policy in Canada. Agr. Pol. Rpts. OECD. Paris. France.
CNGTQ	Canadian Grain Trade Quarterly.
CNSTAT	Statistics Canada. Periodical. Ottawa. Canada.
DAIRYG	CED Dairy Group. ERS-USDA. Unpublished working tables.
DAPROD	Dairy Produce. U.K. Commonwealth Secretariate. London. England.
DASIT	Dairy Situation. Periodical. ERS-USDA.
ECC	European Communities Commission. Brussels. Belgium.
ECE	Economic Commission for Europe. Geneva. Switzerland.
EEC	European Economic Community. Brussels. Belgium.
ERS	Economic Research Service (now part of Economics, Statistics, and and Cooperatives Service). USDA.

ESCS	Economics, Statistics, and Cooperatives Service. USDA
EUROACCT	Comptes Nationales. EUROSTAT. Luxembourg.
EUROAG	Statistique Agricole. EUROSTAT. Luxembourg.
EUROCROP	Production Vegetale. EUROSTAT. Luxembourg.
EUROGEN	Monthly General Statistics Bulletin. EUROSTAT. Luxembourg.
EUROMEAT	Statistique de la Viande. EUROSTAT. Luxembourg.
EUROPRIX	Prix Agricoles. EUROSTAT. Luxembourg.
EUROSTAT	Statistical Office of the European Communities. Luxembourg.
FACTS	EEC Dairy Facts and Figures. Economics Div. U.K. Milk Marketing Board.
FAO	Food and Agricultural Organization of the United Nations. Rome. Italy.
FAOMB	Monthly Bulletin of Agricultural Economics and Statistics. FAO. Rome. Italy.
FAOPROD	FAO Production Yearbook. FAO. Rome. Italy.
FAOTRADE	FAO Trade Yearbook. FAO. Rome. Italy.
FAS	Foreign Agricultural Service. USDA.
FENEWS	Feed Market News. Periodical. AMS-USDA
FESIT	Feed Situation. Periodical. ERS-USDA.
FOSIT	Fats and Oils Situation. Periodical. ERS-USDA.
FRSTAT	Statistique Agricole. Ministry of Agriculture. Paris. France.
GMNEWS	Grain Market News. Periodical. AMS-USDA.
GRANOS	Junta Nacional de Granos. Buenos Aires. Argentina.
GRSTAT	Statistisches Jahrbuch fuer die Bundesrepublik Deutschland. STATBUND. Wiesbaden. Germany.
GUARD	Annual Review and Determination of Guarantees. U.K. Ministry of Agriculture, Fisheries and Food. London. England.
INDSTAT	Indian Bulletin of Agriculture and Statistics. New Delhi. India.
IRANAG	Ministry of Agriculture. Teheran. Iran.
IWS	International Wheat Statistics. International Wheat Council. London. England.

JPAGST	Statistical Yearbook. Ministry of Agriculture and Fisheries. Tokyo. Japan.
JPINAN	Prices Indexes Annual. Statistical Department. Bank of Japan. Tokyo.
JPRICE	Annual Report of the Retail Price Survey. Office of the Prime Minister. Tokyo. Japan.
JPTRADE	Japan Exports and Imports. Ministry of Finance, ed. Tokyo: Japan Tariff Association.
KORAG	Korean Agricultural Statistics. Seoul. Korea.
LMSIT	Livestock and Meat Situation. Periodical. ERS-USDA.
LMSTAT	Livestock and Meat Statistics. Stat. Bul. 522. ERS-USDA.
MARCHES	Marches Agricoles. ECC. Brussels. Belgium.
MEXBANK	National Bank of Mexico. Mexico.
MEXSTAT	Anuario Estadistico del Comercio Exterior de las Estados Unidos Mexicanos. Mexico.
NAPROV	National Provisioner. Periodical. Chicago.
NIRAP	U.S. National Interregional Agricultural Production Model. ERS-USDA.
NZDB	New Zealand Dairy Board. Wellington. New Zealand.
OECD	Organization for Economic Cooperation and Development. Paris. France.
OECDAG	Agricultural Statistics. OECD. Paris. France.
OECDTR	Trade by Commodities, Market Summaries: Exports and Imports. OECD. Paris. France.
PAKSTAT	Pakistan Annual Report of the Ministry of Agriculture. Karachi. Pakistan.
PESTAT	Poultry and Egg Statistics. Stat. Bul. 525. ERS-USDA.
PRAUSS	Preise Loehne Wirtschaftsrechnungen. Reihe 1: Preise und Preisindizes fuer Aussenhandelsgueter. STATBUND. Wiesbaden. Germany.
PREAG	Precos Recibidos pelos Agricultores. VARGAS. Average figures prepared for USDA.
REVAG	Review of the Agricultural Situation in Europe. FAO/ECE Agricultural Div. Geneva. Switzerland.
RISIT	Rice Situation. Periodical. ERS-USDA.
RMEATR	Reuters Meat Report. London. England.
SRS	Statistical Reporting Service (now part of Economics, Statistics, and Cooperatives Service). USDA.

STAJAP	Statistical Abstract of Japan.
STATBUND	Statistisches Bundesamt. Wiesbaden. Germany.
THAIMB	Bank of Thailand Monthly Bulletin. Bangkok. Thailand.
THAIBD	Board of Trade. Government of Thailand. Bangkok. Thailand.
USDA	U.S. Department of Agriculture. Washington, D.C.
VARGAS	Centro de Estudios Agricolas. Fundacao Getulio Vargas. Rio de Janeiro. Brazil.
WHSIT	Wheat Situation. Periodical. ERS-USDA.
WRICE	World Rice Model. ERS-USDA.

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